Journal
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Joint Pan American-AVMA Meeting, Kansas City, August 24-27, 1959

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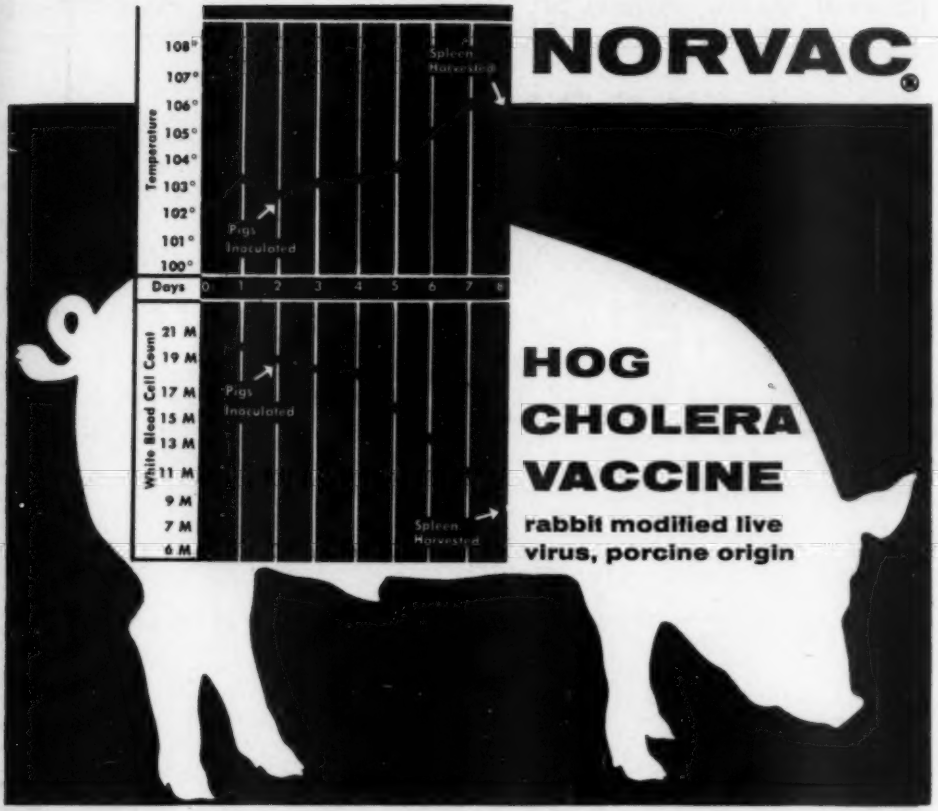

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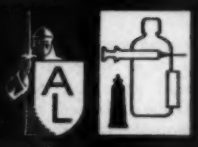

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Correspondence

Feb. 17, 1959

Dear Sir:

The headline on page 97 of your issue for Jan. 15, 1959, "Dr. Agnes Sjöberg Pioneered Veterinary Medicine for Women in Europe," is not strictly accurate, as Miss Aleen Isabella Cust underwent the four-year course of training at the New Veterinary College, Edinburg, from 1896 to 1900, 15 years before Dr. Sjöberg first went to veterinary college. Miss Cust was described as a brilliant student.

Miss Cust subsequently went into practice in the west of Ireland, and served as veterinary inspector to the Galway County Council, and during the first World War was attached in a bacteriological laboratory to the Royal Army Veterinary Corps on active service in France. She formally became a member of the Royal College of Veterinary Surgeons in 1922, following [a change in the] Sex Disqualification Act. She died in 1937 whilst on a holiday in Jamaica.

Her place as the first woman veterinarian is commemorated by the Miss Aleen Cust Research Fellowship, and the furniture of the Royal College of Veterinary Surgeons Library in London was presented in her memory.

Yours faithfully,
s/W. G. R. OATES, Registrar,
Royal College of Veterinary Surgeons, London

• • •

January 4, 1959

Dear Sir:

I am writing you a brief note on a case of feed poisoning that occurred in a herd of purebred Ayrshires in my practice. This herd was poisoned with urea.

The herd was stabled in a barn, with 15 cows on each side. When the farmer fed the cows their grain, those on one side were not affected while those on the other side began to drop and show signs of acute sickness. I treated 10 of the 15 cows that night. One died that night and another one had to be salvaged. It took three days for the others to show much improvement and to come back to production.

Laboratory analysis showed that the feed (a commercial ration) contained 10.1 per cent concentration of urea. A representative of the producer said that the bag given to the cows on the one side apparently had been mixed wrong but he could not explain how it happened. The company settled with the farmer out of court at approximately $7,000.

This is another example of feed poisoning with additives which shows what a mistake in mixing will do.

Very truly yours,
s/K. W. BENSON
Bainbridge, N.Y.

• • •

Feb. 12, 1959

Dear Dr. Aitken:

This is about a very trivial matter but one which has intrigued us quite a bit! It arises out of a note on page 71 of the January 15 issue of your JOURNAL. The note deals with virus pneumonia in pigs and our trouble arises over the "Cornhusker" which is to be added to the solution of sodium sulphathiazole for the treatment of virus pneumonia. None of us in this Bureau can guess what "Cornhusker" is and some of the guesses have been pretty wild! My own is that it is some sort of illicit whisky or "moonshine" used at cornhusking parties which I understand are, or used to be, quite events in some parts of the U.S.A.! Will you please let us have a short note which will clear up our difficulty and let us know whose guess was nearest to the truth. Some think it must be some new antibiotic!

With kind regards.

Yours sincerely,
s/M. CRAWFORD
Commonwealth Bureau of Animal Health
Weybridge, England

[Mr. Crawford was advised that Cornhusker, a product of the Corn States Serum Co., Omaha, Neb., was named for the "Cornhusker State." It is a solution of various salts in an aromatized base which is markedly palatable for swine. It provides a ready source of electrolytes to replace those lost by the body during diarrhea.—Ed.]

• • •

Feb. 24, 1959

Dear Dr. Aitken:

Thank you for your letter of February 20 re "Cornhusker," which has cleared up our little difficulty.

I am a little sorry that my guess about "moonshine" has proved to be so wide of the mark.

Some wit once said that the American and British are "sister nations divided by a common language" and occasionally one thinks he might have had something!

Again, many thanks.

Yours sincerely,
s/M. CRAWFORD

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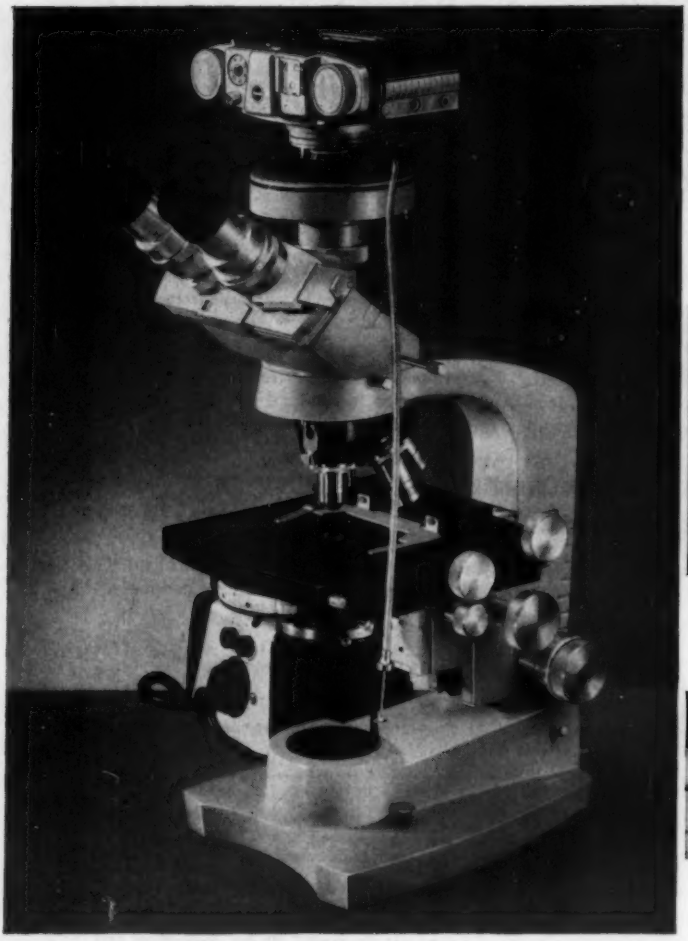

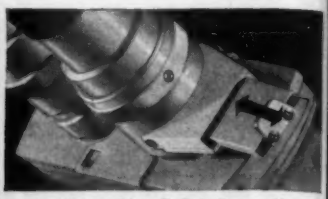

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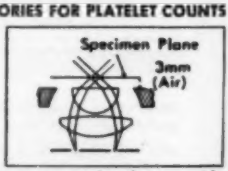

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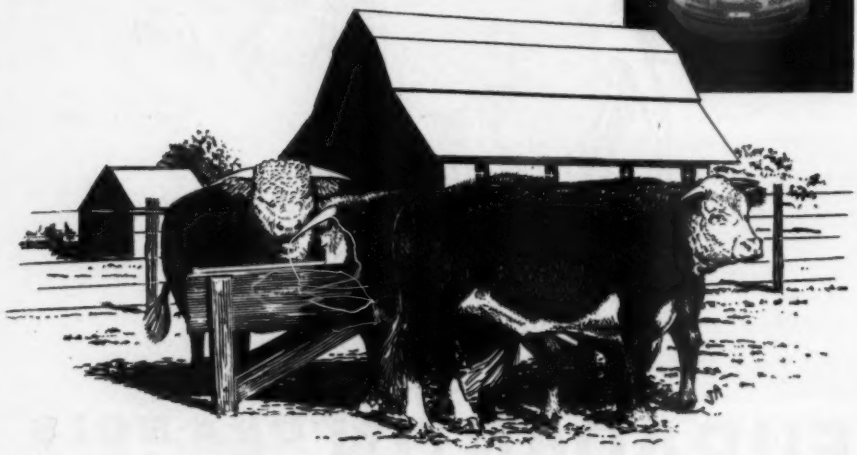

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AVMA Report

A Strong Local Association in Action

Bruce Hostrawser, past-president,
Michiana V.M.A.

Presented at the AVMA Public Relations Conference, Philadelphia, August 17, 1958

The Michiana Veterinary Medical Association, so named because its location includes portions of Northern Indiana and Southern Michigan, is within a 50-mile radius of South Bend, Indiana. Organized in 1939 by eight practicing veterinarians who felt the need for better relations within the profession in the area, it has grown to over 60 members. We have monthly meetings, ten of them scientific; a family picnic is held in July, and a Christmas party, in December.

There are some things we consider essential to the life of a strong organization. The first is internal public relations. This is largely cooperation among ourselves.

When I came to South Bend nine years ago, my nearest colleague called on the phone and invited my wife and me to the next Michiana meeting. When meeting time came near, they called to remind us and arranged to pick us up. We felt welcomed to the group, and became part of Michiana at that first meeting.

We have a hospitality committee for the exclusive purpose of introducing new members and getting them acquainted with the group. The growth of a deeper friendship between veterinarians within an area can be invaluable from the standpoint of performing a better job for our clients, and establishing good public relations.

Of course this all leads to friendliness—and being friendly is everyone's job, both in and out of the association. It is so easy to meet a client with a smile and say, "What can we do for you today?" instead of, "What do you want?"—they both mean the same thing, but what a different atmosphere to start (or finish) a friendship!

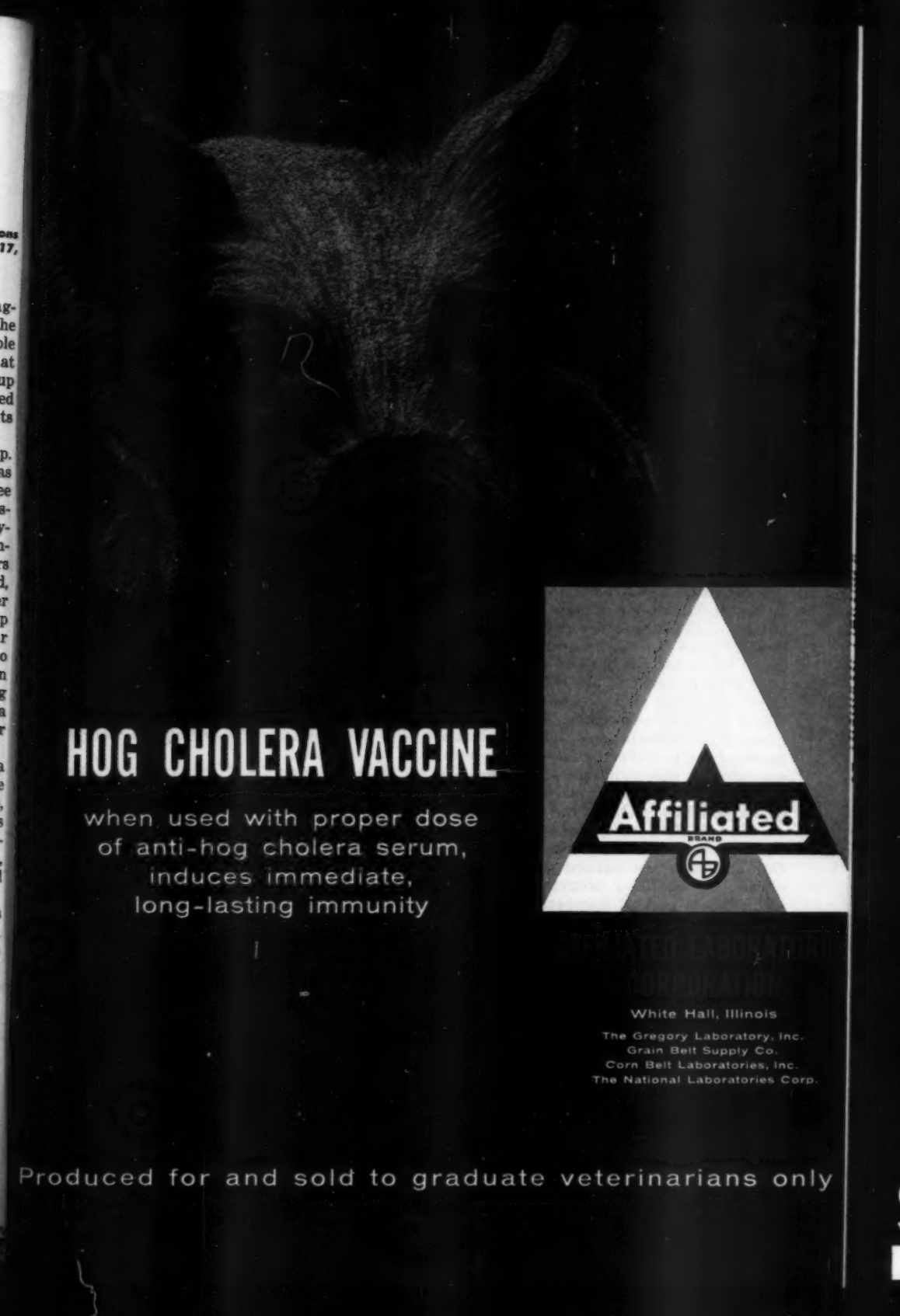
When my neighboring veterinarian phones to ask my opinion, it makes me proud to know that he values my judgment. On the other hand, it gives me a comfortable feeling to know I can talk to my "competitor" who sometimes puts me on the right track. For example, when I referred a difficult case to my neighbor, he examined the dog and suggested the diagnosis and treatment in a note which he mailed promptly to me. When I was able to show the letter to my client, I felt that the profession had gone another step up the ladder in her mind. I am convinced that consultation will make, not lose, clients for you.

Secondly, we should consider leadership. How do you get leadership? Michiana has accomplished this through committee action. Officers alone cannot make an association function—this is an every-member responsibility. We have 11 committees of approximately five members each. Everyone works for Michiana and, in turn, the organization makes better veterinarians of its members. Membership in these committees is changed from year to year. New members are brought in to serve, and this new blood is like a shot in the arm. To keep committees functioning and active, the president often asks for a report from chairmen at the regular monthly meeting.

Each committee chairman serves as a member of the corresponding committee with the state association. For example, the chairman of our ethics committee is also a member of the state ethics committee. This holds true for our membership, legislative, nutrition, public health, civil defense, and public relations committees.

This is the way your local associations can help make a strong state association. The continuity between state and local is not interrupted. As you know, we are strong only by being united all the way down the line.

Every other year we have an extra special project—our clinic. Besides helping to raise funds for our association, we have a lot of fun while increasing our knowledge. I have been a member of Michiana during four of these clinics with a different chairman every time. This year, 138 veterinarians registered, in addition to a few students (who slipped away from Dr. Armistead at school only to find him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sitting in the front row). These clinics are the most successful when put on by your own members. They help find talent, give participants self-assurance, and make them available for state, local, and national meetings. Thus, clinics serve a threefold purpose.

It would be only fair to mention our auxiliary. During Clinic Day, the ladies took tickets, typed identification badges, and arranged entertainment for the visiting veterinarians' wives in the afternoon. When the clinic was completed, we met at a local hotel for dinner and dancing.

Anyone who has attended our clinic has had a productive time. He has taken his wife out for an evening, made friends with more colleagues, spent an interesting and informative time, and he goes home with some good ideas.

In Michiana everyone is a part of the association—if you give a member something to do, then it becomes *his* association and not just the one to which he pays dues. An association cannot exist on good fellowship alone; it has to offer something to the individual practitioner.

At the beginning of the year, all the officers of the association and the auxiliary meet to draw up the programs. This may sound like a big job but our programs, set up a year in advance, are divided between large and small animal subjects. An individual is made responsible for each program. He contacts the speaker, makes necessary arrangements for any material needed, and personally sees to it that the speaker is there and introduced.

The auxiliary assumes the responsibility for having our yearly programs printed. It's one of the handiest books in the office! Our programs are planned and listed well ahead; the auxiliary programs are listed, too. Officers and all members of the committees are recorded, as are addresses and phone numbers of all members.

We feel that a dinner meeting with our wives each time pays off in attendance and interest. After dinner, the women have their meeting in a room separate from our scientific meeting which begins almost immediately afterwards. The guest speaker can then choose between leaving after the scientific portion and staying for the business meeting.

One of the most important aspects of association work is public service—or public relations. This is the work done by the association in creating "better climate" for your personal services, practice, and usefulness to the community.

We in Michiana have gone about this in a number of ways:

1) One of our members serves on the St. Joseph County Health Council.

2) Each year, a few members vaccinate the animals at the Children's Storyland Zoo.

3) About a dozen members serve at the dog show without charge. This requires only two or three hours of the members' time once a year. The good public relations created by several members manning a booth under the sign "Michiana Veterinary Medical Association" is tremendous.

4) The last two years, the school board in our city has set up a vocational guidance clinic for junior high and high school students. This is a two-night affair for students who are interested in college for professional and highly skilled courses. Parents are also urged to attend. To explain their various professions and vocations there are representatives from public health, engineering, radio, TV, nursing, dentistry, medicine, and all big industries. With the help of the AVMA public relations director, eight members of Michiana told the story of the veterinary profession. The pamphlet "Veterinary Medicine as a Career" was handed out and explained in detail to about 75 young men and women who were interested in becoming members of our profession.

5) As an additional public service, we invited Dean L. M. Hutchings of Purdue to talk to a group of students at one of our local high schools on their "career day."

6) Last year, we were lucky enough to obtain time on our local TV station to present a series of programs on the veterinary profession. I think many associations could develop this same type of public relations. The TV stations have a certain amount of time to use in public service, so why not use it!

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We have listed a few of the points considered helpful in making a strong local association. If we have supplied one idea that can be used by your own group, our endeavor will have been a success.

In conclusion, here are five suggestions for improving your local association:

1) *Participation.*—Let each member of the association participate, feel part of the group. This helps to create harmony and better understanding.

2) *Realization.*—Be realistic in your endeavors and projects. Select projects or undertakings that your association can handle and which have a reasonable chance of success, but don't underestimate your members.

3) *Imagination.*—Here is where your ideas and plans make the difference between an excellent association and a mediocre one.

4) *Dedication.*—The greatest idea in the world is ineffective unless a dedicated person puts it into practical operation.

5) *Enthusiasm.*—Many a great idea has fallen by the wayside because a member did not have the enthusiasm and conviction to carry it through to a profitable conclusion. On the other hand, enthusiasm can be contagious, can pave the way to success.

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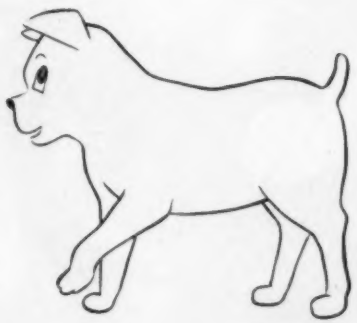

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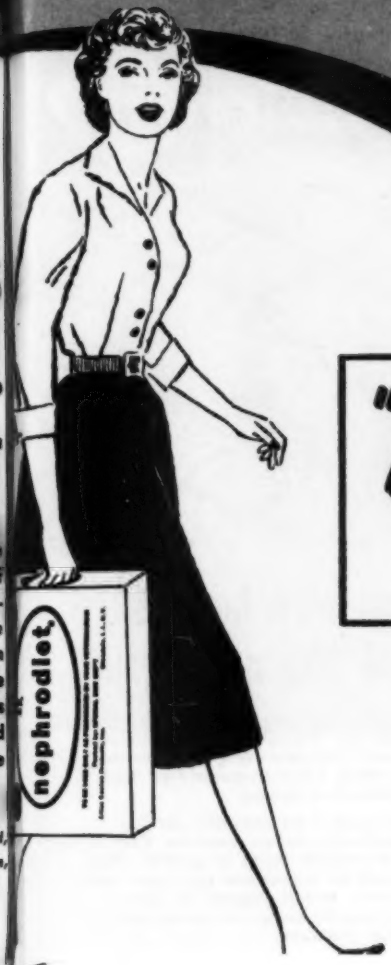

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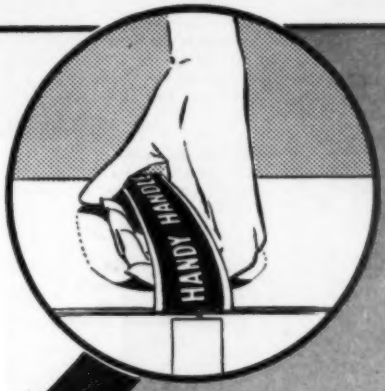

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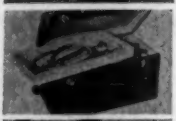

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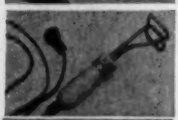

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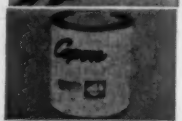

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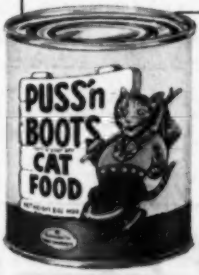

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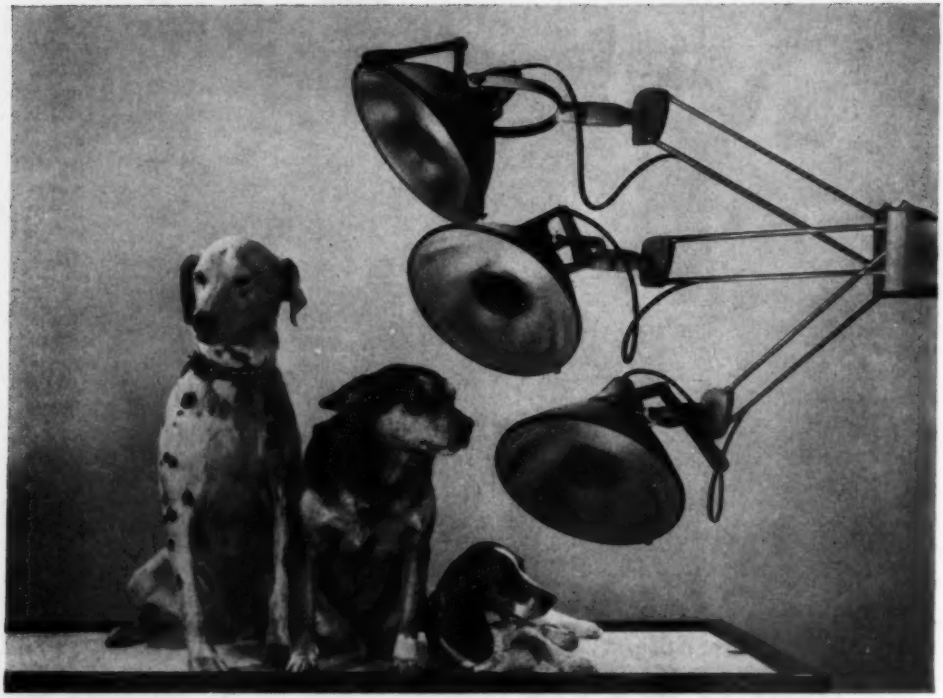

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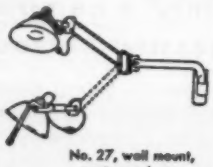

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The Role of the Veterinarian in Artificial Insemination

EDWIN B. SMITH, D.V.M.

Canton, New York

ARTIFICIAL INSEMINATION was introduced in the United States in 1938. At that time, few people realized the importance it would assume in the dairy industry. Today it is responsible for at least 25 per cent of all dairy calves born. Artificial insemination, through the use of better sires and management, has increased the production of the dairy cow to where it is today.

The first few years of artificial insemination was a period of trial and error. Techniques had to be developed for semen evaluation, dilution, preservation, and other aspects of handling semen. Conception rates of 50 to 60 per cent were considered good during that era, as compared to 70 per cent or better today. Semen preservatives and dilutors are being improved constantly and even higher conception rates can be expected.

Due to good promotion, the acceptance of artificial insemination has been tremendous. In 1957, over 6 million cows in 946,000 herds were bred artificially in the United States. In 1958, 27 per cent of the cattle of breedable age probably were artificially inseminated. Many believe that 50 per cent will be bred artificially in the near future.

What has been and what will be the role of the veterinarian in the artificial insemination program?

During the early years of artificial insemination, the veterinary profession declined to take the responsibility for developing and promoting the new venture. Farmers also were reluctant to accept the new development. So, for many years, and even today, as much or more time is spent selling and promoting the program as is spent doing the actual work.

The veterinary profession did not have the time or personnel to do the job of promotion and selling that had been done. The few veterinarians employed as inseminators were not considered successful, since pressure of practice and higher-paying professional work did not allow time to promote and sell. As a result, training programs were created for lay personnel who were trained in the art of inseminating cattle as well as in the sales program needed to promulgate this new service.

Consequently, for many years the role of the veterinarian in artificial insemination was to work closely with the farmers in treating the "difficult to settle" cows, in diagnosing pregnancies, and in other sterility work. Better breeding records informed the dairyman when he had animals that were slow to conceive. This greatly increased the sterility work in large animal practices. Better treatments and new techniques have helped veterinarians cope with these cows. Lectures, scientific papers, and special courses on infertility in cows have been in great demand by veterinarians. Dairymen learned that their veterinarian could help solve their breeding problems and that results could be gratifying.

Thus, for many years the promotion and insemination work was done by trained lay personnel, with the veterinarian treating the difficult breeders. But eventually, some dairymen decided that if the veterinarian were breeding the cattle, perhaps he could detect difficult-to-breed cows more quickly, could start treatments sooner, and

Dr. Smith is a large animal practitioner in Canton, N.Y.
Presented before the Section on Surgery and Obstetrics, Ninety-Fifth Annual Meeting, American Veterinary Medical Association, Philadelphia, Pa., Aug. 18-21, 1958.

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the breedings per conception could be decreased. In addition, if a veterinarian were breeding cattle, he could check pregnancies and answer questions on breeding and sterility problems. So began the demand for veterinarians to do the actual work of insemination.

I feel that artificial insemination is a professional procedure which should be protected by the veterinary practice act, since much more is involved than just simply inseminating a cow. In most states today, there are semen-producing organizations which employ veterinarians as inseminators. These men are pioneers in the field. If they prove they can successfully handle a breeding business along with their practices, and if they prove that because of their ability to recognize and treat sterility and diagnose pregnancies, they are better inseminators, then we may expect more demand for veterinarians to do this work in the future.

ARTIFICIAL INSEMINATION AND A LARGE ANIMAL PRACTICE

Perhaps you have been asked to inseminate cattle and would like a frank discussion of how you could incorporate it into your practice. Fortunately, the ground work in artificial insemination has been done. The program still has to be advertised and sold, but the acceptance is good. It is a breeding service, not a mere matter of supplying semen.

This work was and is being done by skilled technicians who practice sanitation and use sterilized equipment. They do not carry disease from cow to cow or herd to herd. On a barn breeding chart, and in their "master breeding book," they keep records of sires, cows, and breeding dates. To compete, the veterinarian doing insemination work must follow the same rigid high standard of cleanliness and of record keeping. In addition to inseminating cows—which the lay technician does ably—he must also use to the fullest extent his superior knowledge of diagnosis and treatment of sterility problems so that the dairymen will benefit by a higher conception rate.

In many areas, artificial insemination fits into a large animal practice well because the breeding season peak is at a different time than the peak of other professional work. The work is interesting and the approach to the farmer is on a different level than in practice. You are working with your clients to develop an improved herd of cattle, not just treating the sick animals.

To men entering practice, artificial insemination could be helpful in developing clients. To men already in practice, it may be a means of increasing their clientele. The tuberculosis and brucellosis testing programs have been drastically cut in some areas. The future of physical examination programs is doubtful. These facts, plus the decreased net income of the large animal client, all have a direct influence on the net income of the practicing veterinarian.

If you are considering entering this field of breeding of cattle, several factors should be studied.

1) Are there enough breedable cows in your practice area? A minimum of 1,000 cows a year must be bred for it to be profitable for you or the semen organization.

2) Do you have time to do the work? Artificial breeding is a 365-days-a-year job and should only be undertaken when two or more men practice together.

3) Is the available breeding service acceptable to you and to the farmers, and will it give you a contract for a territory corresponding to your practice area?

4) Will you, as an inseminator, promote and sell this program? Any breeding service, to be successful, must be promoted, advertised, and sold; you, as an inseminator, are expected to do this while remaining professionally ethical.

If you decide to incorporate artificial breeding into your practice, you will be entering a field which we as a profession refused to handle at its inception 20 years ago.

FUTURE ROLE OF THE VETERINARIAN

The future role of the veterinarian in artificial insemination is entirely dependent upon the combined efforts of the educators, the scientists, and clinicians in veterinary medicine.

The educators might well take a less lethargic and pessimistic attitude toward the future of large animal practice. Dairy cattle and beef cattle are an integral part of our economy and require the professional skills of the veterinary profession.

Our veterinarians of the future must have a better understanding of reproductive physiology, and more actual clinical training in diagnosis. A course in the technique of artificial insemination as well as more training in the field of breeding problems would be highly beneficial. More short courses in sterility should be given for practitioners.

Our future research workers must not only have a sound background in physiology, bacteriology, and biochemistry, but should also have practical clinical training.

STERILITY PROBLEMS IN AN AI PROGRAM

The cause of sterility is too often interpreted according to the scientific approach. To a bacteriologist, it is considered the result of bacterial or viral infections; to the pathologist, it is the result of alterations in tissues and organs; while to an endocrinologist, it is caused by altered glandular functions and failure of organs to produce the hormones necessary for normal reproduction.

These viewpoints are scientifically healthy and each is valuable to the clinician. However, the clinician must properly correlate them if he is not to become confused. The clinician must be better trained in the ability to diagnose pregnancy. He should never treat a cow for a supposed abnormality until he has positively eliminated pregnancy.

Actually, most cows brought to the attention of the veterinarian for reproductive failure are only temporarily and relatively infertile. Specific infections such as vibriosis, brucellosis, trichomaniasis, and granular venereal disease can cause reproductive failure. In addition, a number of microorganisms are found in the reproductive organs of infertile cattle; their role is unknown.

Organisms normally harmless to the reproductive tracts in a particular herd of breeding cattle may cause uterine and cervical infections resulting in infertility in heifers and new additions to the herd. Many veterinarians feel that the problems of "repeat breeding" and low-grade metritis may be associated and they are using a variety of antiseptic agents in the bovine uterus as treatments.

I have done extensive work in this field and have used with satisfactory results a uterine antibiotic infusion at the time of insemination. For this I prefer a calcium-oxytetracycline-glucose complex (Embryostat*) chosen for its compatibility with sperm, and for its broad antimicrobial spectrum. In sterile aqueous solution, it has a pH range of 6.3 to 6.7 which approximates that of sperm. For me it has been valuable in the treatment of nonspecific infections of the uterus and has the distinct advantage that it can be used before insemination, at the time of insemination, or afterward.

Many nonspecific infections are difficult to diagnose and many veterinarians tend to call these cows normal, healthy breeders, placing the blame for failure of conception on the technician or the semen. In most instances, such an attitude is wrong. It causes poor public relations with our farmers, the artificial inseminators, and the semen-producing organizations. Semen of high quality is supplied by semen-producing organizations today. Technicians are doing their best to impregnate cows. When they fail to do so and call for professional help, we are not showing much intelligence or courtesy if we blame either the technician or the semen for our own inability to diagnose the trouble. As a profession, we are justifiably criticized for this attitude.

CONCLUSION

Artificial insemination is a permanent scientific advancement, benefiting the dairy and beef industry. It will increase in the future. The role of the veterinarian in this field is entirely up to us. We can do the insemination work as well as the sterility work, or we can cooperate with lay inseminators and farmers in treating their problem breeders.

Either way, the large animal practitioner can develop a program that will mutually benefit the farmer and himself. This is a facet of veterinary service that fits into the economic picture of demand for services. It is not subject to encroachment from nonprofessional sources since it is based upon diagnostic skills and professional technique.

*Embryostat, Charles Pfizer, Inc., Brooklyn, N.Y.

Experiments with dogs seem to indicate that low levels of radiation may increase their resistance to microbial diseases.—*Sci. News Letter, 75, (Jan. 31, 1959):38.*

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Diagnosis and Treatment of Nonspecific Infertility in the Dairy Cow

PHILLIP M. HINZE, D.V.M.

Carnation, Washington

CONSIDERABLE INFORMATION has been compiled in the field of dairy cattle infertility, and important advancements are being made in the diagnosis and treatment of this syndrome. Clinically speaking, however, diagnosis is still a complex problem and, because of this, therapy is often unsuccessful.

The real complexity of the problem can be appreciated only after one has had the opportunity to evaluate current diagnostic and therapeutic procedures on a large number of cattle and to summarize accurate breeding records from these cases. From such an experience, it is learned that factors of inheritance, environment, and management, as well as physiology and pathology in the male or female, may individually or collectively account for the cause of a given case of infertility.

One also learns that a certain percentage of cattle are destined to become repeat breeders because of these factors and that a diagnosis, or even an accurate prognosis, may be virtually impossible within the realm of dairy cattle economics.

On the brighter side of the picture, a majority of infertile cows will fall within one of several categories, etiologically speaking, and the cause of infertility can be diagnosed after careful examination or treated successfully by trial and error. It is, therefore, the purpose of this paper to emphasize the importance of some of the occult factors responsible for infertility and to offer suggestions on the diagnosis, treatment, and prognosis of the more routine cases.

ENDOCRINE DISORDERS

Emphasis will be placed primarily on the cystic ovary syndrome because this problem and its complications are of much greater significance to the breeding efficiency of a dairy herd than is generally assumed. Other endocrine disorders will be discussed only briefly.

Breeding data were collected on the herd of registered Holstein-Friesians at the Carnation Milk Farms for the 30-year period from 1920 to 1950.[5] This herd has had veterinary supervision since its inception and accurate breeding records have been kept on all females. Various data have been summarized and evaluated[4] and other data are currently being gathered from this wealth of information.

From the general results of this study, it is postulated that cystic ovaries, twinning, abortions, retained fetal membranes, and estrus after conception are in some way influenced by a common endocrine weakness which is measurably transmitted through successive generations. Environment may also play a large role in endocrine abnormalities above and beyond that of inheritance, the incidence being much higher in the herd that is managed for optimum production.

OVARIAN ABNORMALITIES

The incidence of ovarian abnormalities and their effect, directly and indirectly, on the fertility of the Carnation cows are summarized (table 1).

This summary suggests that cystic ovaries and short estrous cycles, although not usually classified as cystic degeneration, directly delayed conception in 29.4 per cent of the cows in this herd at some time during their lifetimes, and indirectly increased the twinning rates, abortions, and retained fetal membranes above herd average. The twinning rate was largely governed by the type of therapy and the time of conception following treatment of cystic ovaries.

Much of this data was collected at a time when manual expression was about the only treatment used, but considerable hormone therapy was used during the last years of the trial. Cows with unexpressed cysts had a twinning rate of 4.3 per cent,

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Presented before the Section on Surgery and Obstetrics, Ninety-Fifth Annual Meeting, American Veterinary Medical Association, Philadelphia, Pa., Aug. 18-21, 1958.

which was essentially herd average, whereas cows from which cysts had been expressed had a rate of 11.3 per cent. Those conceiving within 25 days after expression of cysts had a twinning rate of 23.3 per cent; those within a 75-day period had a rate of 15.7 per cent. Cows conceiving later than this twinned at a rate equal to herd average.

It was previously thought that hormone therapy was the cause of this high incidence of twinning, but these data suggest that it is manipulation of the ovary, with or without hormone therapy, that is responsible. The increase in abortions and retained fetal membranes are undoubtedly associated with increased twinning.

It was found that 5.6 per cent of all cows studied had one or more heat periods following conception and that 71.3 per cent of them had cystic ovaries before becoming pregnant.[8] This has practical importance because pregnant cows thought to be sterile may be sent to slaughter; or, if reinseminated artificially at this false heat, an early abortion may be caused, thus delaying gestation.

To all of these factors add the fact that cows with a history of ovarian cysts tend to have recurring cysts at a rate three to four times the herd average, and the so-called "minor" problem of cystic ovaries can become one of major importance.

Diagnosis of Cystic Degeneration.—Typical follicular and luteal cysts are easily diagnosed because of their gross appearance and by the altered estrous cycle and other behavior changes. However, many cystic ovaries differ morphologically and in the way they influence the estrous cycle. The large cysts may cause no impairment of fertility or, conversely, may cause true nymphomania. The majority cause either polyestrus or anestrus, depending upon whether they are follicular or luteal. On the other hand, the cyst that is no larger than a normal graafian follicle might be responsible for any of the symptoms described, yet be left undiagnosed because of its size.

The small cyst is plentiful in recent parturient cows and in heifers that have had a few normal heat periods, then lapsed into anestrus. Some of these will disappear before estrus but others will remain for long periods unless treated. Clinical signs may include complete anestrus or mild polyestrus that may be unnoticed unless observed carefully. In either case, the vulva is slightly swollen and there is a thin, watery discharge that lacks the viscosity of true estrous mucus.

Physically, both ovaries are about the same size and are often mistaken for normal ovaries. However, there is a certain tenseness about one or both that can be recognized with experience. A quick, firm thrust of the thumb, while the ovary is held securely in the hand, will usually rupture the cyst, leaving practically no substance to the ovary. If a yellow body is present instead of a cyst, this procedure will partially dislodge it, producing a crunchy, or crepitating, sensation that is diagnostic. To avoid injury to the ovary, just the right amount of pressure must be used.

TABLE I—Incidence of Bovine Ovarian Abnormalities and Their Effect on Fertility

	Cows with cystic ovaries	Cows with short heat periods	Herd average
Incidence	12.13%	17.27%	———
Breedings per conception	3.28	3.25	2.12
Abortions	10.8 %	9.2 %	6.8 %
Twinning rate	9.3 %	7.7 %	4.73%

Treatment of Cystic Ovaries.—Although cystic ovaries have been one of the more tangible factors in bovine infertility, both from the standpoint of diagnosis and treatment, correcting this condition can be exasperating. One trial, conducted at the Carnation Farms on 113 cows, revealed that only 67.5 per cent of those with cystic ovaries conceived and they were treated with gonadotropins an average of 1.67 times. The 32.5 per cent which did not conceive were treated an average of three times, with several cows being treated as many as eight times.

A fewer number of cows in another group was treated with a specific brand of chorionic gonadotropin for clinical evaluation purposes. In this trial, 60 per cent responded in a reasonable manner and a total of 82 per cent became pregnant eventually; however, the time from initial therapy to conception averaged 103 days.

Results from the above trials and others indicate that if a cow with cystic ovaries is going to respond to hormone therapy, she will do so following one or two treatments. This suggests that the gonado-

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tropic hormones currently prescribed are specific for about 50 per cent of the cases. If the proper physiological balance can be established by altering the dosage of repeated injections, gonadotropins may be successful in others. However, some cows were given as many as eight treatments without response. This suggests that either the ovary is not capable of being activated or gonadotropin failure is not the true cause of the cyst.

Recent experience shows that best results are obtained when the cyst is either expressed or drained at the time of gonadotropin therapy because some cases will remain active until the cyst is removed. If there are pronounced clinical signs, the cyst should be drained with a hypodermic needle via the vagina. If the cyst is inert, expression into the abdominal cavity is adequate. Trials with the purified luteinizing factor, chorionic gonadotropin, and anterior pituitary gonadotropin have given about equal results. However, some cows may respond to one drug but not to another. Anaphylactic reactions have occurred with chorionic gonadotropin, but not with anterior pituitary products. Other hormones, such as progesterone, have had little value in the treatment of cystic ovaries in cows in this herd.

OTHER ENDOCRINE DISORDERS

Delayed ovulation is a cause of infertility and many cows are treated with follicle-stimulating hormone (FSH) routinely without evidence of delayed ovulation. This treatment will naturally produce results in a few animals but the percentage will be small. Diagnosis of this condition is possible if the cow can be examined daily for two or three days following breeding. Treatment at this time with FSH would, of course, be wasted, but treatment with FSH given intramuscularly two or three days before the next anticipated estrus (or intravenously early in the estrous period) is indicated on the assumption that she is consistently ovulating late.

In one trial involving 58 repeat-breeder cows treated with FSH, only 12 conceived, suggesting that delayed ovulation is not the sole cause of the trouble in these cases. The 12 that did conceive had been bred an average of 6.5 times before treatment, thus indicating that delayed ovulation is definitely a cause of infertility in a few animals.

Work done with estrogens, luteinizing hormones, and progesterone shows a definite place for these hormones in the treatment of bovine infertility but, like FSH, their action is specific and therefore they must be used at the proper time to produce results.

The injection of mild estrogens early in the heat period enhances the action of natural estrogens in stimulating the production of lutein which, in turn, aids in ovulation and the production of luteal cells. Luteinizing hormones used late or shortly after heat would accomplish essentially the same purpose. Progesterone in repositol form should be used late in heat or shortly after breeding to supplement natural progesterone in preparing the endometrium for so-called "nidation."

Unlike delayed ovulation, however, a diagnosis of these deficiencies is difficult at the time of their existence and the cause is established in some cases only after a considerable period.

In view of these specific actions, a high degree of success could hardly be expected from the routine use of hormones in the repeat-breeder cow.

A familiar problem is the cow which has been bred a number of times and suddenly develops cystic ovaries. This suggests that the pituitary gland is functioning just enough to stimulate heat, but not enough to round out a complete estrous cycle in all of its phases. Sooner or later, the cycle stops because of cystic degeneration. This happens in a fair percentage of repeat-breeder cows, but if they are treated for cystic ovaries, they conceive. The use of gonadotropins at one of the heat periods before cystic degeneration occurred would probably have been the answer in this case; therefore, chorionic gonadotropin or anterior pituitary gonadotropin is indicated in some cases before clinical evidence of cystic degeneration occurs.

Another familiar problem, not quite as prevalent as the one just described, is the metritis that defies diagnosis. Neither rectal palpation nor the character of the vaginal mucus at estrus reveals infection; yet, after several heat periods, or the use of supplemental estrogens, a small amount of thick, heavy pus is expelled and conception usually occurs. This type of infection responds poorly to antibiotics un-

less the exudate is discharged; therefore, intrauterine treatment without the use of estrogens has failed.

EMBRYONIC MORTALITY

It has been reported[5] for this herd that of 9,302 fertilizations, 1,915 (20.6%) embryos were lost. The embryo loss for clinically normal cows was 11.4 per cent; for clinically abnormal cows and heifers, an average of 16.6 per cent. Reproductive efficiency was poor for cows with infections of the genital tract and estimated embryo loss exceeded 40.0 per cent. Embryo losses were equally high for cows with cystic ovaries.

These data supplement other figures on embryonic mortality but an interesting phase of this survey is that heifers had a significantly higher embryo loss than did cows, even though fertilization was equal. Cows in their fourth or fifth reproductive period had the highest efficiency as determined from the number of fetuses carried to term. Fertilizations per service declined markedly after this age.

CONCEPTION FOLLOWING RETAINED FETAL MEMBRANES

The retention of fetal membranes is a common complication of pregnancy in the dairy cow and is closely associated with cystic ovaries and twinning.

A careful study has been conducted[9] to determine the relationship between breeding efficiency and the occurrence of retained fetal membranes. It was found that in no case was the subsequent breeding efficiency as high as it was before the condition occurred. Of these cows, 60 per cent had a subsequent breeding efficiency slightly higher than herd average, whereas 40 per cent had a breeding efficiency much lower than herd average. However, most of the latter had a previous low breeding efficiency; the former were exceptionally good breeders before the condition occurred.

UTERINE INFECTIONS AND INFERTILITY

The healthy bovine uterus is, in general, free from bacteria.[7] But research to date indicates that a high percentage of cows that have normal heat periods, and appear normal otherwise, fail to reproduce because of uterine infection. It has been reported[1] that metritis is most commonly caused by streptococci, staphylococci, Corynebacterium organisms, and *Escherichia coli*, all of which are found in the normal surroundings of the dairy herd.

Of the repeat-breeding cows in a generalized survey, 75 per cent had a low grade infection of the uterus.[2] It has also been estimated that 40 per cent of all bovine infertility is due to vibriosis.[8] Although these data appear a bit controversial, they may be correct, because uterine infections are often an area problem and may vary from place to place.

These findings have led to the use of various intrauterine treatments, some of which have met with considerable success. A penicillin-streptomycin mixture (Combiotic*) has proved effective in the Carnation herd and in the area in general, especially for those cows having normal heat periods and clear mucus. It was first used in a group of 130 cows which had been bred an average of 3.3 times, some as many as 13 times; as a result of breeding at the time of treatment, 65 cows (50% of the group) conceived. Without any further treatment, 24 cows conceived at the following breeding, making a total of 74 per cent in all. After additional therapy with this or other medicaments, 24 cows (18%) conceived; 11 (8%) were finally disposed of as sterile. This treatment has continued to work well, especially in heifers or young cows.

It is most efficacious when used one or two days following breeding. It (6 cc.) is mixed with sterile water or saline solution (20 cc. for heifers; 40 cc. for cows) and instilled equally into each uterine horn.

Cows with gross evidence of uterine disease, such as purulent or mucopurulent discharge, respond poorly to this combination of antibiotics unless given repeatedly and supplemented with estrogens.

It is assumed that most mixed uterine infections begin at parturition, or during the puerperal phase immediately postpartum, and not after the uterus has returned to its nongravid state. If this is correct, appropriate treatment of the uterus as soon as the fetal membranes are passed would prevent chronic infections and increase subsequent breeding efficiency.

*Produced as Combiotic (each 3 cc. contains 300,000 units penicillin 6 procaine, 100,000 units penicillin 6 sodium buffered with sodium citrate, and 1.0 Gm. dihydrostreptomycin sulfate), Pfizer Laboratories, Brooklyn, N.Y.

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For 18 months, every cow that calved was used in a treatment trial.[10] Group 1 consisted of untreated controls; each cow in group 2 was treated with 2 1-Gm. tablets of oxytetracycline; and those in group 3 were treated with 2 uterine tablets composed of neomycin, urea, boric acid, and sulfathiazole. It was originally planned to have 100 cows in each group; however, before this goal was reached, it became obvious that cows in the control group were breeding much better than those in either treated group so therapy was discontinued. Results of this trial are summarized (table 2).

TABLE 2—Results of Intrauterine Medication Following Calving, to Prevent Subsequent Metritis

	Group 1 No treatment	Group 2 Oxytetracycline	Group 3 Neomycin**
Number of cows in trial	79	75	74
Number conceived	73	67	71
Conceived after first service*	60%	49%	40%
Conceived after one to three services**	85.3%	73.3%	72.9%
Breedings per conception	1.67	2.24	2.56

*Percentage computed on total number conceived; **tablets containing neomycin, urea, boric acid, and sulfathiazole.

It is difficult to understand why medication of the uterus of the normal cow at parturition should lower subsequent breeding efficiency, especially when intrauterine treatment is successful at or near breeding time. One can only assume that antibiotics destroy beneficial organisms, enzymes, or other factors which are necessary for the normal "clean-up" of the uterus following parturition.

DISCUSSION

Infertility in the cow is merely a consequence of disease resulting from inheritance, environment, and management as well as physiological and pathological factors. It would be folly to expect uniform results from any one type of therapy when there are so many causes. Cases of functional sterility are probably in the minority but, because of the difficult diagnosis, they account for more than their share of therapeutic failures.

The endocrine system of high-producing dairy cows is in rather delicate balance and each time an estrous cycle is completed without conception, there is a chance for interruption in one of the following phases. Cystic ovaries and short estrous cycles affected over 29 per cent of the cows in the Carnation herd at one period during their lifetimes, and one condition was equally as important as the other in causing delayed conception both directly and indirectly. Irregular estrous cycles longer than normal were not associated with decline in fertility beyond herd average.

Infections of the genital system are, according to some authorities,[1,2,7,8] responsible for most cases of bovine infertility Considerable progress has been made in the diagnosis and control of both contagious and noncontagious genital infections, making this phase of the problem much easier to handle than functional infertility.

Regardless of etiological factors, and our knowledge of infertility, there will always be cows that fail to breed, because some are physiologically strong and others weak. Certain conditions of stress such as forced lactation, twins, generalized infections, and nutritional extremes will identify the weak cows but the strong ones will continue to breed in spite of stress. Some of the factors responsible for these differences are inherited, and there is little that can be accomplished without changing this inheritance.

SUMMARY

Cystic ovaries and short estrous cycles caused delayed conception in 29.4 per cent of the cows in a herd under observation for many years. The data presented indicate that manual expression of ovarian cysts directly influences upward the rate of twinning. Cows that have ovarian cysts tend to have recurrences at a rate of three to four times that of the herd average.

Cystic ovaries should respond to one or two hormone treatments or not at all. Best results are obtained when the cysts are expressed or drained at the time the drug is given.

The intrauterine instillation of a penicillin-streptomycin mixture (Combiotic) to overcome infertility due to low-grade metritis is described. Of 130 cows that had been bred unsuccessfully an average of 3.3 times, 65 conceived from the first breeding following such treatment, and 24 from the next service.

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Radioactivity in Contaminated Milk

In England, in October, 1957, a uranium fire occurred in an overheated breeder-type reactor (now obsolete), and large quantities of fission products escaped through the exhaust stack. The external radiation level in the downwind area was extremely low, but analysis of milk from cows grazing in the area indicated a high level of radioactivity, mostly identified as iodine-131. About 250,000 gallons of milk from 600 herds in a 200- to 300-square mile area was condemned over a period of two to three weeks.—*Pub. Health Rep., 74, (Jan., 1959):42.*

Milking Machine Pulsators and the Mastitis Problem

The function of the milking machine pulsator is to cause the rubber teat cup liner to open and close at a uniform rate. The periodic collapse of the rubber liner against the teat end serves the purpose of enhancing circulation of blood through the teat. A pulsator that has become worn or cannot function properly due to accumulation of dirt or organic matter in its functional parts contributes to stress on the teats.

A recording instrument called the "strain gage amplifier," demonstrates that the pulsator malfunction commonly occurs on commercial dairy farms. In programs for mastitis prevention and control, much more attention needs to be given to the condition of pulsators. They should be cleaned periodically and immediate replacement should follow detection of worn parts. —*O. W. Schalm, D.V.M., Ph.D., and D. O. Noorlander, B.S., Davis, Calif, at the 1959 Midwinter Conference of the California V.M.A., Davis.*

Epidemic of Q Fever in Australia

After ten years in which only 60 cases of Q fever were reported in South Australia, 53 serologically positive cases occurred in one community from May to December in 1957. All except one, a dairy farmer, were abattoir workers. The attack rate was highest for carcass inspectors, next highest for beef and offal floor workers, low among mutton workers, and negligible for non-meat workers and drovers.

Transmission was believed to be by spray from infected cows near the end of pregnancy. Dust did not appear to play any part in the transmission.—*Canad. J. Pub. Health, 50, (Jan., 1959): 31.*

Q Fever in Britain

Q fever is widespread in Britain and is often manifested as pneumonia or as a fever of unknown origin. Infection is mainly from cattle, but also from sheep. *Rickettsia (Coxiella) burneti* has been isolated from milk of cows and goats, from fetal membranes and wool of sheep, and from sheep ticks.

In one area, clinical cases were mostly newcomers; the residents seemed to have acquired immunity. Raw milk appeared to be the chief mode of spread, some milk containing 5 to 500 guinea pig infective doses per milliliter. Antibodies in the whey may have protected some persons against infection. Of 94 cases of pneumonia in the area, 30 were due to Q fever.

Infection was not limited to those drinking raw milk or handling animals. Most cases occurred between April and July. Pasteurization at 161 F. for 15 seconds or 145 F. for 30 minutes killed the rickettsias. —*J.Am.M.A. (Dec. 13, 1958): 2047.*

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Management of Bovine Genital Infections
I. Intravaginal Therapy

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EFFICIENT REPRODUCTION depends upon viable sperm and ova and a healthy genital tract, as well as normal fertilization, implantation, and fetal development. It is now commonly accepted that bovine genital infection, either specific or nonspecific, is responsible for most cases of impaired fertility in cows. While specific infections such as brucellosis, vibriosis, leptospirosis, and trichomoniasis have received much study, few investigations concerned nonspecific infections. Authors' estimates of the relative role of these infections in lowering fertility vary considerably.[1,7,13] It is also common knowledge that after the elimination or control of specific genital diseases in many herds, conception rates remain low, due presumably to nonspecific or "low-grade" infections.

To the practitioner, the question why some apparently normal cows conceive immediately and others do not despite repeated inseminations with semen of good quality is disturbing. To the owner, every cow which is temporarily sterile represents a twofold economic loss: (1) The calf crop is reduced, and (2) it is necessary to board the animal longer during the unprofitable period of declining lactation.

The objectives of our study were: (1) to investigate bacteriologically the genital tract of cows in herds with suboptimal breeding efficiency despite freedom from brucellosis, leptospirosis, trichomoniasis, and relative freedom from vibriosis; (2) to evaluate clinically the possible favorable effect on fertility of an antibacterial vaginal insert containing nitrofurazone (Furacin*) and used in a periodic control program.

MATERIALS AND METHOD

The study extended from May, 1955, to July, 1958, and involved four herds of dairy cattle located close to the college laboratory and in which an average total of 530 cows of breeding age was maintained, artificial insemination was used, and calfhood vaccination was practiced for over ten years. About half the animals served as controls and the other half were treated with nitrofurazone vaginal inserts. One vaginal insert was introduced manually deep into the vagina of each treated animal twice weekly. Cows were so treated from a few weeks after calving until after conception; virgin heifers for one month prior to the estimated time of breeding.

After cleansing the external genitalia, a Pyrex glass speculum, cleansed in freshly prepared quaternary ammonium solutions, was inserted. Sterile cotton swabs on metal applicators were then introduced through the speculum and specimens for bacteriological examinations were obtained from the posterior portion of the cervix and the floor of the vagina by swabbing thoroughly the cervical end of the vagina and the os cervicis. Any uterine secretions present were also submitted for cultural study.

Since it became apparent early in the study that there was no significant difference in the predominating organisms among untreated and treated animals, the time-consuming bacteriological determinations were limited to 33 cows in the control group and 19 cows in the group to be treated. In the latter group, samples were taken from all 19 prior to initiating treatment and 14 following completion of treatment. It was believed that testing of the other 5 animals would not have added to the study.

Swabs and secretion specimens were seeded in thioglycollate medium and incubated at 37 C. for 24 hours. Growth was then transferred to selective mediums: Loeffler's medium, infusion agar, Endo agar, tryptose broth, blood agar, Eugonagar, and yeast-beef agar. Twenty-four-hour-old cultures were transferred to nutrient broth or trypticase-soy broth for differential fermentation reactions and other identification tests.

For sensitivity testing, sterile yeast-beef agar was poured into a Petri dish to a depth of about 2 mm., pouring over this an equal quantity of Eugonagar, heavily inoculated with nutrient broth cultures of the test organism, only the predominating organisms being tested for sensitivity. Following solidification, standard discs (Sensi-Discs**) containing high and low concentrations of antibacterial substances were placed on the surface of the plate, incubated for 72 hours at 37 C., and observed every 12 hours for inhibition. The zone of inhibition was

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These studies were made possible through grants from Eaton Labs., Norwich, N.Y.

*The vaginal inserts (Furacin Suppositories Veterinary, containing 0.4% nitrofurazone) were supplied by Eaton Labs., Norwich, N.Y.

**Supplied by Baltimore Biological Lab., Baltimore, Md.

measured from the center of the disc. Results were classified as follows.

1) Resistant—no apparent inhibition of organism by either high or low concentration of the drug after 72 hours' incubation at 37 C.

2) Moderately sensitive—inhibition for 24 hours followed by decreasing zone size at 48 and 72 hours; or inhibition with high concentrations only.

3) Sensitive—inhibition for 72 hours with both low and high concentrations; the drugs producing the largest inhibition zone were designated as preferred drugs for that organism.

RESULTS AND DISCUSSION

Bacteriological results are shown (table 1). From representative cows in the four herds, 66 swab samples were cultured: 33 from control cows, and 33 from the treated cows, from 19 of which swabs were taken pretreatment and 14 post-treatment. Post-treatment swabs were obtained one month or more after treatment.

A large variety of organisms was recovered from both the controls and treated groups. Many of these organisms are no doubt "contaminants" indigenous to the dairy industry. While there was no significant difference in predominating flora of treated and untreated animals, there was quantitative evidence that the total number of organisms was reduced following treatment with the vaginal inserts.

In view of the complex nutrient requirements of certain organisms, only bacteria readily cultivable on artificial mediums are included, and no attempt was made to isolate rare organisms such as Leptospira, Vibrio, Clostridium, and Spirochaeta.

The large number of species recovered indicates that the bovine vagina serves as a habitat for many types of saprophytic organisms. Some of these are well known "opportunists" which, under favorable circumstances, may impair fertility by invading the reproductive tissues and the fetus.

The anatomic location of the bovine external genitalia predisposes these organs to heavy fecal contamination. Defecation periodically introduces enteric bacteria into the vulva, and many of these organisms may adapt themselves to the reproductive tract. The physiological adaptation of some of these enteric species to the genital tract is a fascinating subject of study. The term "ascending infections" has been applied to this mode of invasion.

Results of the antibiotic sensitivity tests are shown (table 2). With the exception of *Pseudomonas aeruginosa*, nitrofurazone

TABLE 1—Number of Times Various Organisms Were Recovered From Each of Three Groups of Cows

Organism	Times recovered		
	Controls (33 cows)	Pretreated (19 cows)	Post-treated (14 cows)
Staphylococcus aureus	22	8	7
Streptococcus pyogenes (β-hemolytic)	27	15	9
Streptococcus faecalis	13	11	3
Streptococcus bovis (α-hemolytic)	11	5	7
Streptococcus lactis	5	3	0
Pseudomonas aeruginosa	20	10	8
Escherichia coli (var. communis)	13	15	9
Escherichia coli (var. communior)	17	12	3
Corynebacterium pyogenes	9	7	4
Paracoliform A	15	11	5
Paracoliform B	12	13	8
Paracoliform C	9	5	4
Paracoliform D	14	7	8
Paracoliform E	16	7	3
Bacillus cereus	16	10	6
Proteus vulgaris	7	8	3
Borrelia refringens	4	1	0
Bacillus sp.	8	6	5
Bacteroides sp.	4	3	0
Sarcina lutea	2	0	0
Serratia marcescens	0	1	0
Aerobacter aerogenes	7	6	3
Streptobacillus sp.	0	1	0
Lactobacillus bulgaricus	5	3	2
Flavobacterium sp.	2	0	1
Actinobacillus sp.	3	3	1
Salmonella sp.	5	2	1
Unidentified gram-negative organisms	4	0	1
Unidentified gram-positive organisms	1	0	2
Total isolations	269	173	103
Average per cow	8.21	9.11	7.36

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TABLE 2—Results of Antibiotic Sensitivity Tests Using Organisms Recovered from Cows

Organisms	Nitrofurazone	Bacitracin	Carbomycin	Chloramphenicol	Chlortetracycline	Dihydrostreptomycin	Erythromycin	Oxytetracycline	Penicillin	Polymyxin B	Tetracycline	Trisulfapyrimidines
Streptococcus pyogenes (β-hemolytic)	S*	R	R	S	S*	s	R	s	R	s	s	R
Paracoliform A	S*	R	R	S*	R	s	R	R	R	S	R	s
Paracoliform B	S*	R	R	S	R	S	s	R	R	S	R	R
Paracoliform C	S*	R	R	S*	R	s	s	R	R	S	R	s
Paracoliform D	S*	R	R	S*	R	s	R	R	R	S	R	S
Paracoliform E	S*	R	s	s	S	S	s	S	R	S*	R	R
Escherichia coli (var. communis)	oS	R	R	s	S	S*	s	S	R	S	s	R
Escherichia coli (var. communis-lab. strain)	S*	R	R	S*	S	S*	R	S	R	S	S	R
Escherichia coli (var. communior)	S*	R	R	S*	S	s	R	S	R	S	S	s
Staphylococcus aureus (lab. strain)	S	S	s	s	S	S	S	S	S*	R	s	R
Staphylococcus aureus (cow)	S*	S	s	s	S	S	S*	S	....	R	s	R
Pseudomonas aeruginosa	R	R	R	s	S	S	R	S	R	S*	S	R
Corynebacterium pyogenes	S*	....	R	s	S	....	S	S	S*	R	S*	R

S=sensitive; R=resistant; s=slightly sensitive; *=drug of choice (largest inhibition zone).

was active against all the species recovered from cows. A notable observation was that a laboratory strain (human origin) of *Staphylococcus aureus* was more sensitive to penicillin than to nitrofurazone, while the latter drug showed the best activity against a strain of the same organism isolated from the bovine vagina.

The breeding efficiency in the four herds during the three years of observations is shown (table 3). Prophylactic use of the vaginal inserts reduced the number of services per conception and shortened the interval between calvings.

These results confirm the favorable experience reported by other authors using either nitrofurazone solutions[3,7,8] or suppositories[4,10] to control genital infections in cows with poor breeding efficiency. Among the main advantages of this synthetic antibacterial drug, discovered by American investigators during World War II,[2] are its unimpaired activity in the presence of organic materials, and the fact that development of bacterial resistance is not a problem.[5,11] Nitrofurazone, a useful drug against pathogens of the bovine mastitis complex,[6,9,11] has also been used successfully, either alone[12] or in association with urea,[5] to prevent complications following retention of the bovine fetal membranes.

TABLE 3—Summary of Conception and Calving Records of Dairy Cattle Treated with Nitrofurazone and Untreated Control Cattle

	Herd 1 (300 cows, Ayrshire and Holstein-Friesian)		Herd 2 (150 cows, Holstein-Friesian and Guernsey)		Herd 3 (50 cows, Jersey)		Herd 4 (30 cows, Guernsey)		Av. of all herds (530 cows)	
	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control
Av. services per conception	1.70	2.69	1.91	2.57	2.02	3.19	1.88	2.97	1.88	2.85
No. of calvings per herd over a 3-yr. period	292	331	141	135	64	58	31	33	528	557
Av. days between calving	380	426	374	407	401	451	374	404	385	447

SUMMARY

The bacteria in the bovine genital tract and the fertility-augmenting properties of a vaginal insert containing nitrofurazone

(Furacin) were studied over three years, using 530 cows.

A total of 27 different bacterial organisms was recovered from 66 animals. The flora of treated and untreated animals did not vary significantly. There was quantitative evidence that the total number of organisms was reduced following treatment.

The average number of services per conception was 1.88 in the treated and 2.85 in the untreated cows. The average number of days between calvings was 385 in the treated and 447 in the untreated animals.

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Internal Hernias in Man

Internal hernias of various types and locations occur, with the restraining structures being mesentery, peritoneal reflections, or congenital bands. Some are acquired following surgery or inflammation. A series of eight congenital internal hernias were successively corrected surgically in a period of five years in persons 31 to 75 years old. Acute intestinal obstruction occurred in three of the eight persons.—*Am. J. Surg., 97, (Feb., 1959): 201.*

Tetanus and Chronic Ulcers

Of 88 adult patients treated for tetanus at a Copenhagen hospital, since 1940, infection had gained entrance in ten of them through chronic ulcers of the legs, nine of which were due to varicose veins. Toxigenic tetanus bacilli were found in the ulcer tissue of five.

The course of the disease in these patients was usually protracted, but in two it was fatal. The relative importance of infections from ulcers has increased as infections from traumatic lesions have been reduced by prompt emergency prophylaxis. —*J.Am.M.A., 168, (Nov. 22, 1958): 1700.*

Arsenosobenzene for Prevention of Avian Coccidiosis

Arsenosobenzene (Arzene, Cyanamid) is a trivalent organic arsenical which has been found to be effective in preventing coccidiosis in chickens when included in the ration at 20 parts per million.

In 1946, it was found that certain pentavalent organic arsenicals were coccidiostatic and growth-promoting in their activity. It had been reported in 1911 that pentavalent arsenicals were reduced by body tissues to an active trivalent form. The latter are active *in vitro* while pentavalent forms are not.

Arsenosobenzene has been found to be active against *Eimeria tenella, E. necatrix, E. maxima,* and *E. acervulina* in chickens. —*L. M. Skamser, D.V.M., Princeton, N.J. at the 1959 Midwinter Conference of the California V.M.A., Davis.*

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Evaluation of "Dismount" Semen in Thoroughbred Horse Breeding

FRIEDRICH M. HAAG, D.V.M.

Lexington, Kentucky

In an earlier publication,[2] the concentration of the nonprotein sulfhydryl (-SH) content of the seminal fluid was reported to be inversely related to the probability that a particular semen sample would be fertile. The study was conducted employing what was then termed "tailend samples." Later communications with other workers revealed a considerable confusion in the definition of this term. Local practice in various countries altered the meaning of the term "tailend sample" to such an extent that some workers always found spermatozoa in such samples while others considered the appearance of spermatozoa in such samples as an indication of abnormality.

To avoid confusion, the term "dismount sample" is proposed and is employed in this report.

The stallions used in both this study and the one reported earlier withdraw the penis from the mare prior to its becoming flaccid. Ejaculation is most often complete, but not much loss of turgor has occurred. Therefore, while the stallion is dismounting, an attendant holds a cup under the vulva and then under the glans penis, collecting the semen from the vagina as it follows the withdrawing penis and then the semen which is extruded from the urethra as the penis contracts. If the penis is flaccid prior to withdrawal, only a small sample will be obtained.

In several areas, only the residuum obtained directly from the flaccid penis is known as the "tailend sample." Thus the misunderstanding, since this last portion of the ejaculum would not only be quite different from the entire caught sample in its chemical composition but also would not contain spermatozoa.

From the Sterility Research Station, Lexington, Ky., of the Department of Physiology and Biochemistry, Southwest Foundation for Research and Education, San Antonio, Texas.

This investigation was supported by National Institute of Health Grant No. 4570 and by the American Thoroughbred Breeders Association.

The author thanks Mr. Clarkson Beard and Mr. Gail Hughes, Greentree Stud, Inc., for their cooperation in obtaining the material for this study.

METHODS

In order to evaluate "dismount samples" by several criteria, 3 Thoroughbred stallions were kept for study in one barn and under the same feeding and breeding program. The samples were collected in a warm enamel cup and immediately examined under the microscope (at 440x) for: (1) the percentage of motile spermatozoa; (2) the percentage of morphologically abnormal spermatozoa; and (3) the degree of motility of the spermatozoa on a scale of 10, as described earlier.[1,4]

Aliquots of these samples were frozen and brought to the laboratory for (4) nonprotein -SH determination of the seminal fluid[1,2,4] and (5) the sperm count.[3]

RESULTS

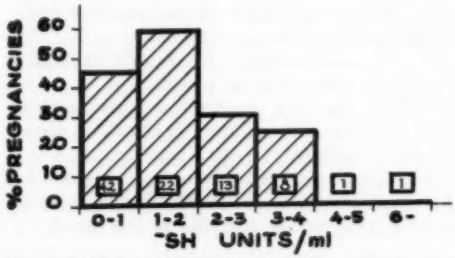
Of the 175 "dismount samples" collected, 87 were from copulations which provided the only breeding of the mare during a given heat period. These samples were examined according to the procedures described and could be definitely related to any resulting pregnancy or failure to conceive.

TABLE I—"Dismount" Semen Samples from Thoroughbred Horses, Studied in Groups of Different Sperm Counts (Millions/ml.)

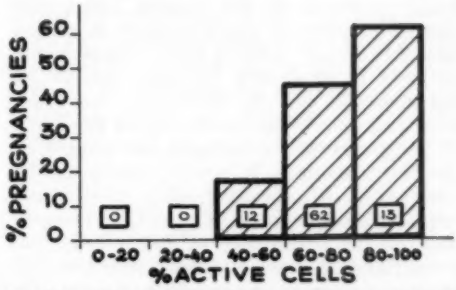
Sperm count range* (av. count of group)	0–24 (8)	25–49 (37)	50–99 (70)	100+ (175)
No. of samples in group	39	17	16	2
Pregnancies obtained by major portions of semen deposited through natural breeding (%)	46.2	35.3	31.2	50.0

*By photoelectric densitometry; the ranges of count chosen are arbitrary and set to provide three groups below the normal for the full ejaculation sample (100-150 millions/ml.).

As shown in graphs, 2, 3, and 4, the values measured are presented as the percentage of pregnancies. As expected from the earlier study on -SH titer,[1] a negative correlation was found between the -SH titer and pregnancy (graph 1). The percentage of active spermatozoa was positively correlated (graph 2) and the percentage



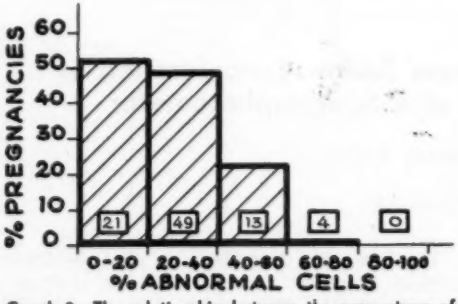
Graph 1—The relationship between the percentage of pregnancies and —SH units in Thoroughbred horses. —SH values have been grouped to permit computation of the percentage of pregnancies per group. The number of semen samples in each group of —SH values is inserted.



Graph 2—The relationship between the percentage of pregnancies and the percentage of active spermatozoa in "dismount samples" of horses. The inserted numbers refer to the number of samples in each group.

of morphologically abnormal spermatozoa (graph 3) was negatively correlated with pregnancy.

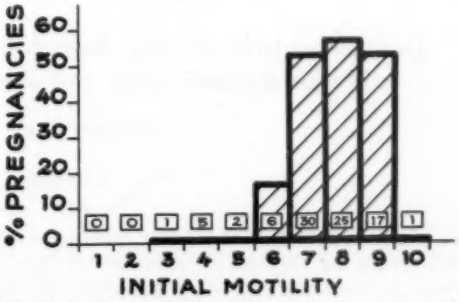
The motility readings do not present a clear correlation with percentage of pregnancies but, as expected, low motility is coincident with low fertility (graph 4). Of 73 samples which showed motility levels



Graph 3—The relationship between the percentage of pregnancies and the percentage of abnormal spermatozoa in "dismount samples" of horses. The numbers inserted refer to the number of samples in each group.

ranging from 7 to 10 on the scale employed, over 50 per cent produced a pregnancy, while of the 14 samples showing a motility value of less than 7, only one resulted in a pregnancy. If more samples had been used, a true correlation probably would have been demonstrated rather than the break-off in fertility at the value of 6 motility units as indicated in the graph.

From spermatozoa counts (millions/ml.) as determined by photoelectric densitometry,[3] there seems to be no relationship between sperm density in the "dismount samples" and the percentage of pregnancy (table 1).



Graph 4—The relationship between the percentage of pregnancies and initial motility readings of the spermatozoa found in the "dismount samples." The numbers in the inserts refer to the number of samples in each group.

DISCUSSION

Since the criteria employed in studying "dismount samples" indicate that there is a significant correlation between the criteria and fertility, as indicated by resulting pregnancies, it follows that such samples can be used to evaluate the fertility of a stallion, at least of that particular ejaculation.

However, one of the best known criteria of fertility, the sperm count, showed no correlation with fertility in this study of "dismount samples." In fact, nine samples showing no spermatozoa (by photoelectric measurement) produced pregnancies (table 1). This requires comment.

During the act of natural breeding, the

major portion of the semen (thus the largest number of spermatozoa) is placed into the female genital tract; consequently, only a small but varying number of spermatozoa will be found in the "dismount sample." Also the degree of flaccidity of the penis will determine the nature of the latter sample. It would, therefore, be misleading to consider only the sperm count without regard to the other criteria such as the percentage of active cells, the percentage of abnormal cells, and the motility of the spermatozoa which are present. The seminal fluid -SH is determinable in all samples.

SUMMARY

Five procedures were employed to evaluate "dismount samples" of the semen of Thoroughbred stallions for potential fertility.

Four of the five procedures were found to be correlated with fertility as would be expected in examining complete ejaculation samples:

1) The percentage of active (motile) spermatozoa present.

2) The percentage of morphologically abnormal spermatozoa present.

3) The motility of spermatozoa present.

4) The concentration of nonprotein seminal fluid sulfhydryl (-SH) compounds.

No correlation was found in regard to the concentration of spermatozoa (sperm count). The reason for this is discussed.

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Determination of the Approximate Sperm Concentration of Horse Semen with the Aid of a Spectrophotometer

FRIEDRICH M. HAAG, D.V.M.

Lexington, Kentucky

THE MEASUREMENT of sperm density in bull semen by the use of photoelectric devices is common practice.[1,3-5] Sperm density in stallion semen has been measured by visual comparison with standard sperm suspensions in a series of tubes.[2] Photoelectric techniques for the measurement of spermatozoa density of stallions have not been developed. This lack has apparently been due to the marked variations in mucus content of stallion semen.

This report describes a photoelectric method adequate for use on most stallion semen samples. This method is compared with that in which a hematocytometer is used.

METHOD

A drop of the undiluted semen is examined under the low power microscope lens using a coverslip. Samples containing considerable amounts of leukocytes or erythrocytes (10 or more per field) or foreign material, such as debris from the prepuce, are eliminated.

Formalin (10.0%) in physiological saline solution (0.9% NaCl) is employed as the diluent.

A 0.2-ml. capillary pipette is used to transfer 0.2 ml. of well-mixed semen into a 15- or 20-ml. vial containing 9.8 ml. of

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The author thanks Mr. Clarksen Beard, Greentree Stud, Inc., Mr. A. B. Hancock, Jr., Claiborne Farm, Mr. F. McKenzie, Castleton Farm, and Drs. F. Sager and G. R. Greenhoff for their kindness and cooperation in obtaining adequate material for this study.

the "diluent." If the viscosity of the sample is too high to permit accurate measurement with such a capillary pipette, this indicates that the sample is unsatisfactory.

The diluent and the semen are mixed by rocking the tube back and forth for about 30 seconds; shaking is avoided. The suspension is then transferred into a calibrated densitometer tube or cuvette, and after all gas bubbles have risen to the top and grossly visible particles have settled to the bottom, the suspension density can be measured. Readings should be taken after one minute and not later than two minutes while the spermatozoa remain in suspension.

The "Spectronic 20"* is employed at the 625-mμ setting. Round cuvettes 13 mm. in diameter and 100 mm. long are used. These tubes were calibrated against a reference tube and permanently marked with the correction factor. The instrument is set on light transmittance=100 while measuring a cuvette containing "diluent" only as a "blank."

*Produced by Bausch & Lomb, Rochester, N.Y.

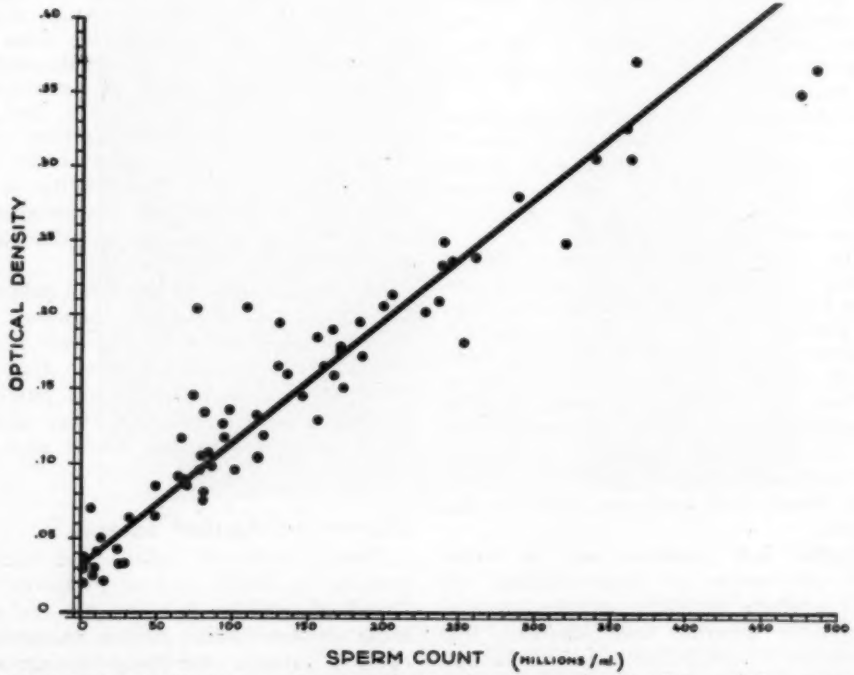
To determine the sperm density in terms of light absorption, aliquots of such diluted samples are counted by the standard hemacytometer technique for comparison. An average count per sample is calculated from eight 1-sq. mm. areas in each instance.

RESULTS

The relationship between the optical density of the samples and the average values of counts on the hemacytometer are shown (graph 1). The correlation coefficient is 0.95. The linear curve plotted through the points represents the average value of the correlation as determined by the linear regression equations: $_y=143.318 + [(1224.09) (-0.1508)] = -41.3$; when x=o (optical density) and $_y=143.318 + [(1224.09) (0.4 - 0.1508)] = 448.3$; when x=0.4.

SUMMARY

The optical density of 66 samples of horse semen, diluted 1:50 with physiological salt solution containing formalin and



Graph 1—Relationship between the optical density of semen samples of stallions and the average values of counts on the hemacytometer.

measured with a spectrophotometer, was found to be directly related to the concentration of spermatozoa.

Even though there were significant differences in viscosity in the undiluted samples, these were found not to effect the determination of sperm density provided the limitations, as outlined under "Method," were recognized.

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Humane Slaughter of Livestock

The U.S.D.A. has designated as humane several methods of handling and slaughtering livestock, in accordance with the provisions of the Humane Slaughter Law of 1958.

Acceptable slaughter procedures are: (1) chemical—the use of carbon dioxide gas for sheep and swine; (2) mechanical—the use of captive bolt stunners or gunshot on sheep, swine, goats, calves, cattle, horses, and mules; (3) electrical—the stunning of swine, sheep, calves, and cattle with electric current.

Ritualistic slaughter had already been designated in the Act as humane because loss of consciousness is produced by anemia of the brain caused by simultaneous and instantaneous severance of the carotid arteries with a sharp instrument.

The carbon dioxide gas is to be administered in a chamber so as to produce surgical anesthesia in the animals before they are shackled, hoisted, thrown, cast, or cut. Excitement and discomfort is to be minimized so that anesthesia can be accomplished quickly in calm animals. Suitable chambers and continuous conveyor devices for moving animals down into the gas and up again when suitably anesthetized have been described in detail too great for this report.

Captive bolt stunners may be either skull penetrating or nonpenetrating but must produce immediate unconsciousness. Acceptable firearms must dispatch free hollow-pointed projectiles or bullets through the skull and into the brain, producing immediate unconsciousness. As with the other acceptable methods of stunning, animals must be handled at all times in such a manner and with such equipment as to deliver them to the stunning area in a calm and uninjured state.

Details of electrical stunning were not described because those pertaining to other methods are applicable.

It will interest our readers that the veterinary profession was properly represented in the planning and study which preceded the announcement of these acceptable methods. Dr. C. D. Van Houweling, assistant administrator of the Agricultural Research Service, was chairman, and Dr. J. R. Hay, director of professional relations, AVMA, was a member of the Humane Slaughter Advisory Committee to the Secretary of Agriculture. Six veterinary authorities on several medical disciplines testified at committee hearings.

The Act declares it to be the policy of the United States that the handling and slaughter of livestock shall be carried out only by humane methods. After June 30, 1960, government agencies will purchase livestock products from only those slaughterers or processors who comply with the Act.

Quarantine Against Scrapie

Certain parts of LaSalle and Warren counties in Illinois, and of Pickaway and Crawford counties in Ohio, are the only areas of the United States quarantined against scrapie, according to amended quarantine provisions published in the *Federal Register*, dated Nov. 15, 1958.

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and radiographs depicting a diagnostic problem are usually published in each issue.

Make your diagnosis from the picture below—then turn the page ▸

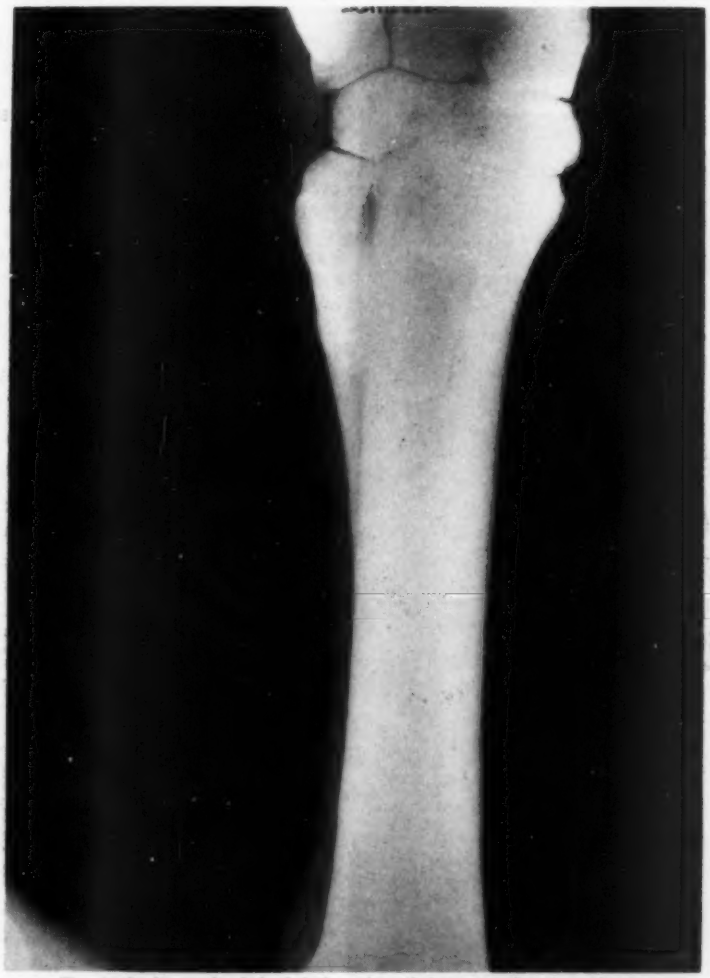

Fig. 1—Radiograph of the left front leg of the mare, dorsolateral view.

History.—A saddle mare, 6 years old, had a swelling of the left front leg extending from above the carpus downward to the fetlock. The enlargement was firm and had been present for some time. The mare, when worked, was lame on that leg. A radiograph, dorsolateral view, was taken as an aid in making a diagnosis and prognosis.

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Chronic periositis and fusion of the fourth metacarpal bone to the third metacarpal bone. Inflammatory changes of the soft tissue are also present.

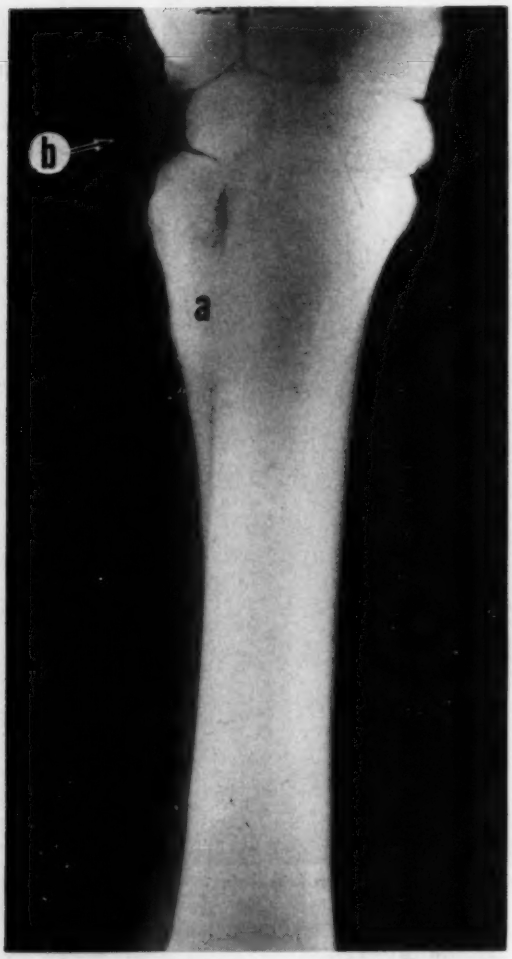

Fig. 2—Radiograph of the mare standing, dorsovolar, lateral-oblique view of the left front leg. Notice the fusion of the fourth to the third (a) metacarpal bones and the inflammatory changes of the soft tissue (b).

Comments.—This type of ailment is often spoken of as "splint" lameness.* According to one text, "Although splints may be present at almost any age of the animal, they ordinarily form before 6 years of age, at which time the interosseous ligaments have been more or less replaced by ossification. Splint lameness is observed whenever there is a strain of the interosseous ligamentous attachment to one or both bones, thereby establishing a local periostitis. Consequently, splint lameness is confined to animals under 6 years of age unless the lesion is high enough to involve the carpal articulation."[1] It is also stated that if the process is of long standing, treatment is not satisfactory. The best treatment offered so far is rest, application of counterirritants, and point firing.

If the horse is not lame, no treatment is recommended. If the condition is of long standing and the horse is lame, the prognosis is poor. Under these conditions, point firing and "blistering" can be done. There is little to be lost and much to be gained with this treatment, but it should be kept in mind that occasionally this procedure will reactivate the inflammation of the osseous tissue. Rest is always indicated.[2]

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This case report was presented by the clinical staff, School of Veterinary Medicine, University of Illinois, Urbana.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

*Dorland's Medical Dictionary: Splint. 2. Single or multiple exostosis succeeding inflammatory processes of the interosseous ligament between the splint bones and the large or third metacarpal in the Equidae.

Surgery and Obstetrics
and Problems of Breeding

Intraoral Approach for Surgical Removal of Foreign Body in the Head of a Dog

SAMUEL POLLOCK, D.V.M.; ARTHUR WINTER, M.D.;
THOMAS V. D'AMICO, M.D.; GABRIEL TUDER, D.V.M.

South Orange, New Jersey

POST-TRAUMATIC behavior reactions in the dog have been described in 2 cases as due to fractures of the anterior fossa of the cranial cavity with overlying frontal lobe laceration and scarring, as verified on necropsy. In association with other neurological signs, the animals evidenced a personality change—"they became very difficult to handle, vicious, snappy, and aggressive. This personality change is utilized as a clinical manifestation of anterior fossa fractures."[1]

The following case study will show how pressure on the trigeminal nerve likewise may elicit bizarre clinical signs in the dog comparable to tic douloureux in man, the characteristic symptom of which is intense pain usually described as a stabbing, lightning-like, or shooting sensation of short duration in the distribution of one of the divisions of the trigeminal nerve.[2]

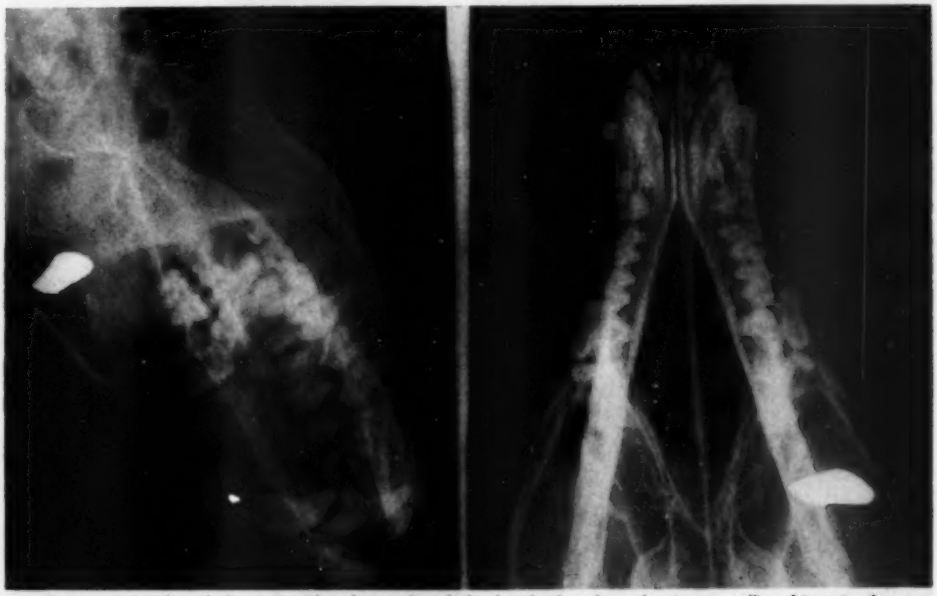

Fig. 1—Lateral and dorsoventral radiographs of the head of a dog, showing metallic object in the region of the right orbit.

CASE REPORT

The subject, a male German Shepherd Dog, 15 months old, was examined because of a marked change in personality; namely, signs of unprovoked frenzy and resentment on handling, a distinct change from his normal behavior. These episodes were unpredictable and of short duration, were frequently associated with mournful howling, and culminated in frenzied chewing of inanimate objects until his mouth would

Dr. Pollock is a small animal practitioner in South Orange, N.J.; Dr. Winter is a resident in neurosurgery, Montefiore Hospital, Bronx, N.Y.; Dr. D'Amico is assistant surgeon, New York Eye and Ear Infirmary, New York, N.Y.; Dr. Tuder is a small animal practitioner in Bayonne, N.J.

The author thanks Mr. Nicholas Cioffi for his photographic assistance, and Mr. Hugh Charles Brown for the diagrams.

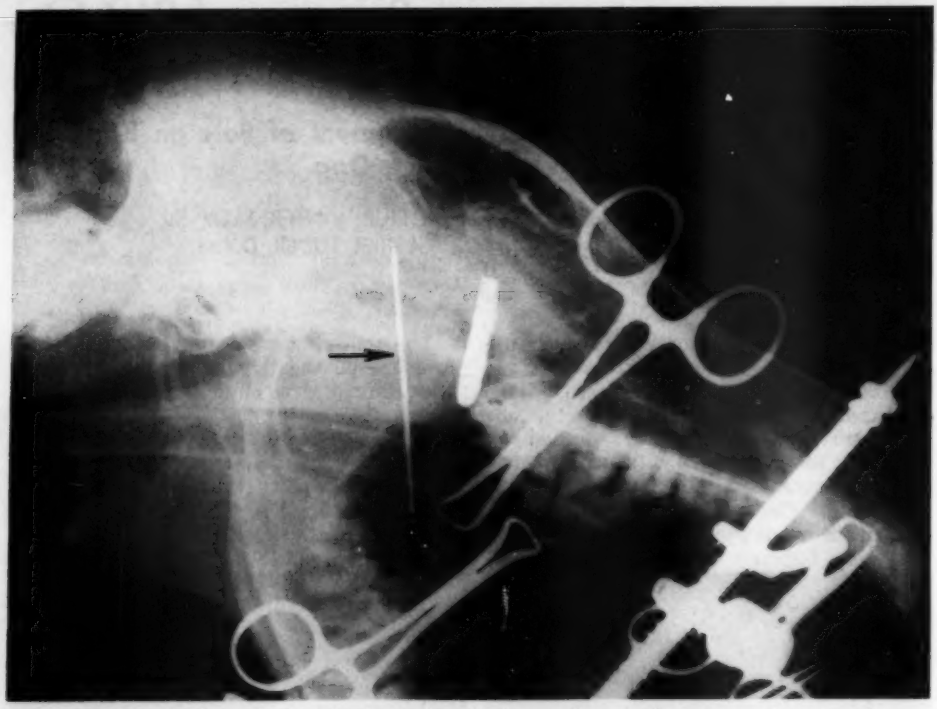

Fig. 2—Lateral radiograph of the head of a dog, showing needle probe (arrow) posterior to metallic object.

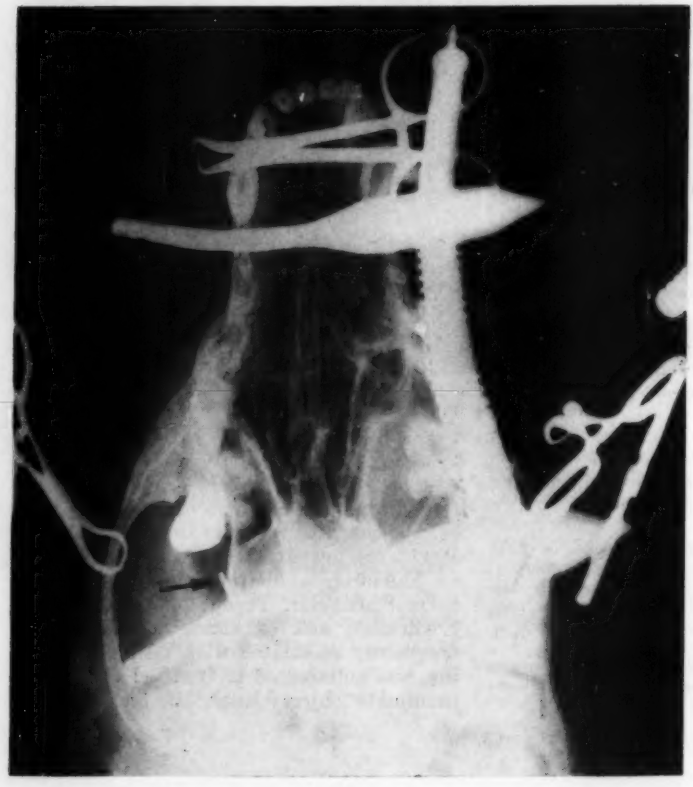

Fig. 3—Ventrodorsal radiograph of the head of a dog, showing position of the needle probe (arrow) in relation to metallic object and last molar tooth.

bleed. Anamnesis disclosed that these signs followed a previous laceration of the lower right eyelid at the lateral canthus. Treated by a local veterinarian, this responded to treatment so that at the time of examination nine weeks later, no scar was observed.

Examination of the head, mouth, neck, and body of the dog disclosed no abnormalities. On the chance possibility that the original laceration of the eyelid might have been severe enough to cause fracture of the orbital bone, radiographs were taken. Lateral and dorsoventral views of the head disclosed a metallic object which appeared to be in the right orbit (fig. 1). The handler employed by the owner volunteered the information that this object was probably a portion of the cage latch on which the dog was believed to have lacerated his eyelid, so a request was made that the broken door latch be removed for identification.

Procedure.—Anesthetized first with thiamylal sodium (Surital*), the dog was maintained under oxygen and ether** for over three hours during a meticulous dissection and search of the entire orbit, without successfully locating the object. A lateral radiograph explained the reason for the failure. During the surgical intervention, with the intratracheal tube in place and with the mouth open by means of a speculum, the foreign body was retracted by the pterygoideus muscle into the pterygopalatine fossa. A ventrodorsal view through the roof of the dog's mouth further showed the object to be located posterior to the last upper right molar tooth. At this point, it was decided to cease the explorations, inform the owner of the failure, and to try invasion through the soft palate later.

The dog was permitted a week's convalescence, during which time the edema of the eyelid subsided. The structures of the eye showed no untoward changes from the extensive surgery.

The dog was again anesthetized and a large straight surgical needle, 7 cm. long and threaded with stainless steel wire, was inserted into the roof of the soft palate at the approximate location to further pinpoint the metallic object. Radiographs, both lateral and ventrodorsal, were then taken (fig. 2, 3). The view through the roof of

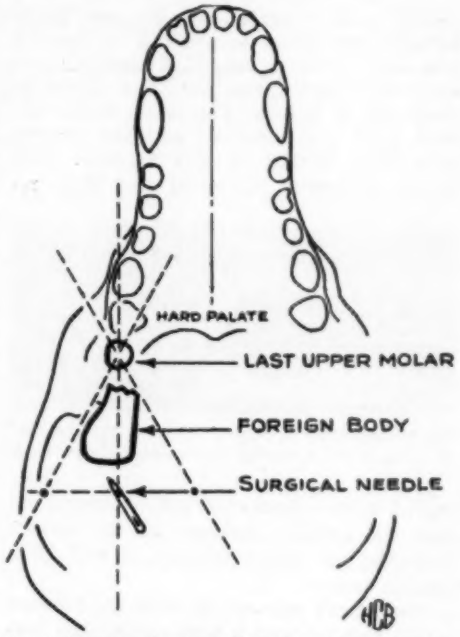

Fig. 4—Diagram showing relationship of needle probe, foreign body, and last upper molar tooth (ventral projection).

the mouth permitted a line to be drawn connecting the needle and the last tooth in the hard palate. The needle was readjusted so that all three objects were in one line (fig. 4, 5). The lateral view indicated the depth of the object, since the length of the needle which protruded above the soft palate could be measured.

Knowing these two coordinated points, the scalpel was inserted anterior to the

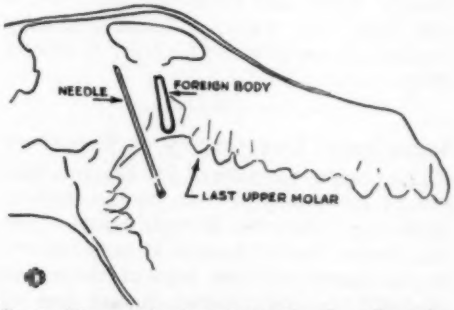

Fig. 5—Diagram showing relationship of needle probe, foreign body, and last upper molar tooth (lateral projection).

*Surital is produced by Parke, Davis and Co., Detroit, Mich.; **NCG Resuscitation and Anesthesia Apparatus, National Cylinder Gas Co., Chicago, Ill.

Clinical Data

needle, and a small incision was made through the tissue to a depth of about 3 mm. and 0.5 cm. in length. A hemostat was used for blunt dissection to a depth of about 2.5 to 3.0 cm. The small finger was then used for palpation and the foreign body was located in this manner. This broken fragment of metal was then removed with a hemostat and photographed (fig. 6). Calcific particles on its surface indicated the body's attempt to wall off a foreign body.

Fig. 6—Broken piece (arrow) removed from the head of a dog, shown in relation to remainder of door latch.

The wound was closed with interrupted cotton sutures, and a final radiograph was taken to insure that there were no pieces of foreign body left behind.

Results.—The dog made an uncomplicated recovery. He was returned on the tenth postoperative day for removal of the sutures. Eight months later, there have been no deviations from his original normal placid temperament.

SUMMARY

An intraoral technique was used for the removal of a foreign body in the pterygopalatine fossa of a dog. Thus it was unnecessary to disturb the osseous structures of the skull. Needle probes were used to pinpoint the location of the foreign body, which was then removed through an incision in the soft palate.

A personality change in this dog was secondary to sensitiveness from the metallic object which impinged upon a branch of the trigeminal nerve. The removal of the foreign body resulted in disappearance of the clinical signs.

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Listeriosis in Mother and Child

The child of a woman who had felt "grippy" several weeks before delivery seemed healthy until 4 days old, when it developed nervous signs. *Listeria monocytogenes* was cultured from its spinal fluid and also from the mother's vagina up to three weeks after delivery. The source of the mother's infection was believed to be a pet dog which had developed fever and a stiff neck, but was not bacteriologically studied.—*J.Am.M.A., 168, (Nov. 1, 1958): 1275.*

Sequelae of Cesarotomy vs. Fetotomy

The economic results of 340 cesarotomies and 80 fetotomies in cows, in the Netherlands, are compared. Mortality was 5 per cent in the former, 9 per cent in the latter. In the former, 59 per cent of the calves lived. Of the cows rebred, 80 per cent of the former group conceived vs. 73 per cent of the latter group.

Fetal membranes were retained by 33 per cent of the cows following cesarotomy, by 20 per cent following fetotomy, and by 11 per cent of control cows after normal parturition. Adhesions of the uterus to other organs occurred in 40 per cent of the cesarotomy cows which were examined; however, 51 per cent of these cows again became pregnant.—*M. Debackere et al. in Vlaams Diergeneesk. Tijdschr., 28, (Jan., 1959): 1-32.*

Correction—Toxoplasmosis in Pups

In the item "Toxoplasmosis in Newborn Pups" in the March 1, 1959, JOURNAL (p. 230), the title should have been *Toxocara Canis in Newborn Pups.*

Correction—Lesions of Nervous System of Pigs with Atrophic Rhinitis

In this item, which appeared in the March 1, 1959, JOURNAL (p. 230), *the studies were carried out in France by Drs. A. J. Brion and M. P. Fontaine of the Ecole Nationale Veterinaire of Alfort, France.* We erred in reporting that the work was done by C. L'Ecuyer in Canada.

Phlegmonous Gastritis in Cattle, Resulting from Ruminatoric Doses of Tartar Emetic

C. E. STEVENS, D.V.M., Ph.D.; P. B. HAMMOND, D.V.M., Ph.D.;
N. O. NIELSEN, D.V.M.

St. Paul, Minnesota

ANOREXIA IS a common problem in all species of animals. If it persists for many days during the course of illness, an attempt is usually made to remedy the condition. In cattle, alimentation through a stomach tube is the most effective method, with parenteral feeding next in effectiveness. However, some consider both methods impractical.

Since regular, coordinated contractions of the reticulum and rumen are often imperceptible in severe anorexia, it is frequently reasoned that if contractions can be initiated, the appetite will return. Drugs used for this purpose are commonly referred to as ruminatorics. Tartar emetic (potassium antimony bitartrate) is a popular ruminatoric. Commercial preparations containing high concentrations of tartar emetic in bolus form have been widely used.

During the course of experimental studies of bloat, a fistulated steer went off feed. A gelatin capsule containing 5 Gm. of tartar emetic was inserted through the rumen. This procedure was repeated on the rumen fistula into the ventral sac of the two succeeding days. Eight days later, during a routine exploration of the rumen, an area of mucosa approximately 5 cm. in diameter was found attached to the floor of the ventral sac only by a peduncle 1 cm. in diameter.

This initial observation indicated that

TABLE I—Summary of Cases in Which Tartar Emetic was Administered to Cattle

Animal	Days 1	2	3	4	5	6	7	8	9	10	11
Mature steer; rumen fistula	5 Gm.T.E.* x	5 Gm. T.E. x	5 Gm. T.E. x	x	x	x	x	x	x	x	Ante-mortem exam. x
Mature cow; engorgement toxemia	20 Gm. T.E. xx	xx	xx	Necropsy xx	---	---	---	---	---	---	---
Mature cow; traumatic gastritis and pericarditis	20 Gm.T.E. x	10 Gm. T.E. xx	20 Gm. T.E. xx	xx	xx	xx	Necropsy xx	---	---	---	---
Experimental calf 1 (500 lb., male). Atropine & starvation	10 Gm. T.E. x	xx	Necropsy xx	---	---	---	---	---	---	---	---
Experimental calf 2 (550 lb., female). Atropine & starvation	10 Gm. T.E. x	x	---	---	---	Necropsy	---	---	---	Necropsy	
Experimental calf 3 (170 lb., male). Atropine & starvation	5 Gm. T.E.	---	Necropsy	---	---	---	---	---	---	---	---
Experimental calf 4 (190 lb., male). Atropine & starvation	5 Gm. T.E.	xx	xx	xx	xx	xx	xx	xx	xx	xx	---
Experimental calf 5 (200 lb., male). No atropine	5 Gm.T.E.	---	---	---	---	---	---	---	---	Necropsy Necropsy	---
Experimental calf 6 (200 lb., male). No atropine	5 Gm.T.E.	---	---	---	---	---	---	---	---	---	---

*T.E.=tartar emetic; x=poor appetite; xx=complete inappetence.

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This work was made possible through a grant from the Agricultural Research Service, U.S.D.A.

Paper No. 3990, scientific journal series, Minnesota Agricultural Experiment Station.

Fig. 1—Experimental calf 2—everted mucosal surface of reticulum showing circular area of darkened necrotic mucosa. Notice separation of necrotic mucosa from normal tissue.

tartar emetic can be a severe irritant to the stomach wall. Further evidence of this effect was provided at the necropsy examination of 2 cows which had been treated with commercial boluses containing tartar emetic. At the time of treatment, these animals had poor appetites and their reticuloruminal contractions were weak or absent. These symptons were associated with experimental engorgement toxemia in 1

Fig. 2—Experimental calf 1—external view of reticulum and anterior portion of the rumen showing severe, localized gastritis, involving the ventral wall of the reticulum.

Fig. 3—Experimental calf 4—view of reticulum and anterior portion of the rumen. The inflammation of the posterior reticular wall is more severe than that seen in calf 1. Darkened, inflamed area in lower center of photograph is where the reticulum was adhered to the diaphragm and liver.

Fig. 4—Experimental calf 2—section through everted reticular lesion, showing hemorrhage and edema (arrows).

cow and with traumatic gastritis and pericarditis in the other.

Both animals died, probably as a consequence of the primary disease. In both cases, large circumscribed areas of necrosis and severe inflammation were found on the floor of the anterior dorsal sac of the rumen. In order to determine whether tartar emetic caused these lesions, the drug was administered to calves under experimental conditions.

EXPERIMENTAL PROCEDURE

A single bolus of tartar emetic was administered orally to each of 6 Holstein-Friesian calves. The calves ranged in weight from 170 to 550 lb. The boluses used were a proprietary formulation containing 45 per cent tartar emetic by weight. The doses used (table 1) were those recommended by the manufacturer.

An attempt was made to reproduce in the experimental calves two conditions which were believed to have favored the development of the localized lesions in the clinical cases described. The first, a fluid rumen ingesta which would allow rapid gravitation of the bolus, was achieved by starving the calves for 36 hours prior to administration of tartar emetic. Trials performed using a fistulated calf indicated that this starvation period did provide a more fluid ingesta and allowed a bolus to drop rapidly to the floor of the reticulum or rumen.

The second condition was the poor motility or atony of the reticulum and rumen, which would delay dispersion of the drug. Atony was experimentally produced by the intramuscular injection of atropine sulfate shortly before, and periodically during, the six hours following the administration of tartar emetic. Atropine was given to 4 of the 6 experimental animals (calves 1-4). The calves were killed for necropsy at varying intervals following the administration of tartar emetic.

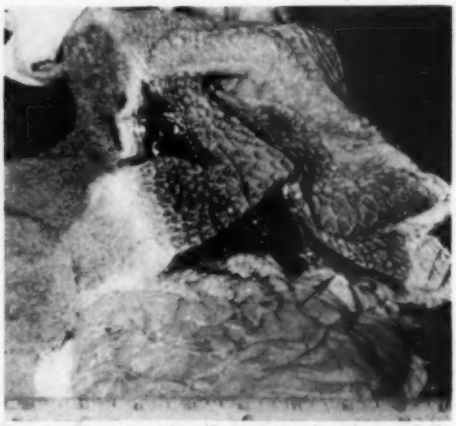

Fig. 5—Experimental calf 4—mucosal surfaces of the reticulum, anterior dorsal sac of the rumen (left), and the abomasum. The lesion involves most of the reticulum and extends into the anterior pillar of the rumen. Cut section of the reticular wall shows severe hemorrhage and edema (arrows).

RESULTS

Each of the 4 calves subjected to starvation and reticuloruminal atony developed a severe localized gastritis following the administration of tartar emetic. By contrast, no gross lesions were observed in the digestive tract of the 2 calves which were starved but not given atropine prior to the administration of tartar emetic (table 1).

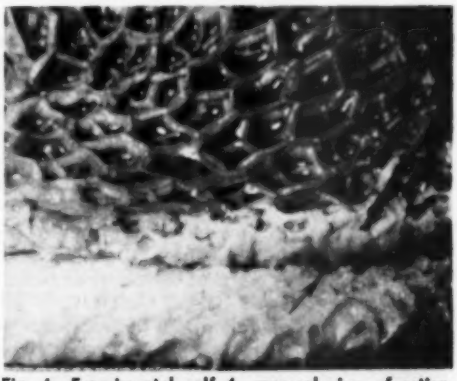

Fig. 6—Experimental calf 4—mucosal view of reticulum showing separation of the necrotic (arrow) from the normal tissue.

The lesions, which were quite similar in each case, involved the floor of either the

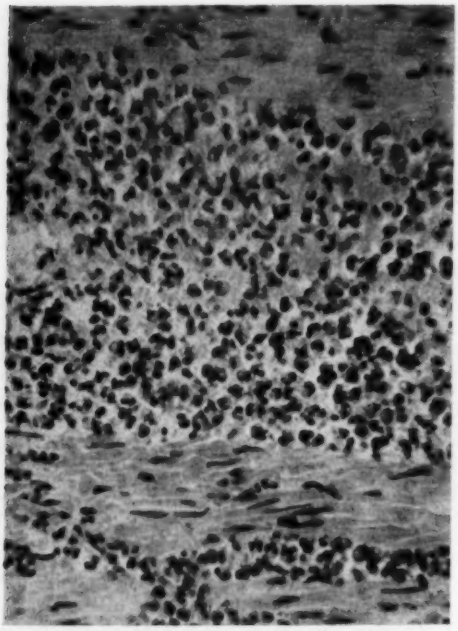

Fig. 7—Experimental calf 1—section through an area of tunica muscularis from the stomach wall where diffuse suppuration was present. Notice the dense neutrophilic infiltrate and necrotic muscle cells. x 300.

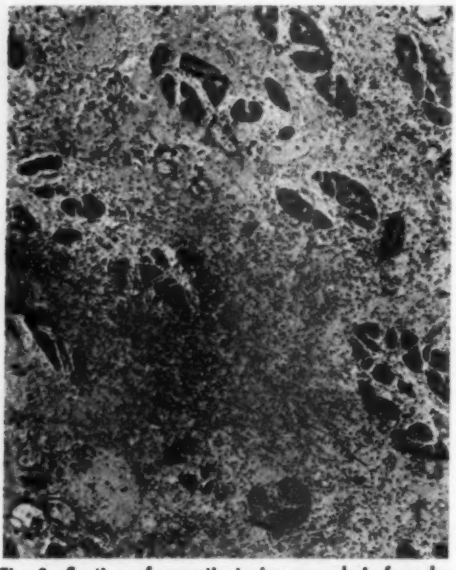

Fig. 8—Section of necrotic tunica muscularis from lesion in the floor of the anterior dorsal sac of the rumen of a cow with traumatic gastritis and pericarditis; taken at necropsy six days after administration of first tartar emetic bolus. Notice the widespread separation of muscle bundles by inflammatory exudate. x 60.

reticulum or the anterior dorsal sac of the rumen. The affected areas were circular, approximately 10 to 20 cm. in diameter, and were clearly delimited when viewed from either the mucosal or serosal surface (fig. 1-3). Cross sections taken through the lesion showed the wall was indurated and greatly thickened with edema, fibrin, and blood (fig. 4, 5). The mucosa was necrotic and separated from the normal tissue around the periphery of the lesion (fig. 6). In experimental calf 4, gentle manual traction was enough to rupture the reticular wall. In all cases, there was a localized peritonitis with fibrinous adhesions to the serous surfaces of adjacent organs.

Microscopic sections of the lesions revealed intense inflammatory reaction. In most of the animals, all layers of the stomach wall were necrotic. The submucosa, tunica muscularis, and subserosa contained areas of dense diffuse neutrophilic infiltrate together with large amounts of edema fluid and fibrin (fig. 7, 8). There was widespread thrombosis, not only of vessels in the submucosa and tunica muscularis, but also of larger arteries and veins lying beneath the serosa. The margins of the lesions were characterized by proliferative changes.

DISCUSSION

Although it is generally recognized that tartar emetic is irritating to mucous membranes,[2,3] little has been done to evaluate its toxic effect under practical conditions of therapeutic application. In his original pharmacological evaluation of tartar emetic as a ruminatoric, one author[1] demonstrated that applying a pledget of cotton soaked in 1 per cent tartar emetic to the reticuloruminal mucosa depressed motility. He attributed this to the irritant action of the drug.

In the present experiment, each of the 4 calves starved and given atropine developed gastric lesions following the administration of a tartar emetic bolus. Three of these calves also remained off feed for a variable time. Calf 4, which was markedly depressed and weak from the time of tartar emetic administration until death, developed a severe febrile reaction by the

second day. In spite of antibiotic and sulfonamide therapy, as well as alimentation by stomach tube, the body temperature remained elevated until the day that it was killed.

By contrast, the 2 calves which were starved and given tartar emetic but not atropine had no gastric lesions, and were never off feed or otherwise affected. This indicated that normal reticuloruminal contractions may serve adequately to dilute tartar emetic to nonirritating concentrations. Thus, tartar emetic probably would be harmless if diluted in large volumes of water prior to administration.

SUMMARY AND CONCLUSIONS

A severe phlegmonous gastritis occurred following the administration of tartar emetic to a steer and 2 cows suffering from anorexia and rumen atony.

Of 6 healthy calves which were starved for 36 hours, a phlegmonous gastritis developed in the 4 given tartar emetic after rumen atony had been induced with atropine sulfate. The 2 calves with normal rumen activity (no atropine given) did not develop gastritis after administration of tartar emetic.

In the group of calves suffering from gastritis, the varying degrees of anorexia and depression which developed following the administration of tartar emetic appeared to be a direct consequence of the lesion.

It was concluded that tartar emetic should be given as a well-diluted drench, especially in the presence of anorexia and rumen atony.

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Ulcers in the Reticulum and Abomasum of a Cow

H. E. BINKS, D.V.M.

Lawrenceburg, Kentucky

RECENT REPORTS[1,2,4] indicate that there is a real or apparent increase in the incidence of abomasal ulcers in the bovine species. This case is reported in the hope that it may aid other clinicians in the diagnosis of this condition.

CASE REPORT

On Oct. 25, 1958, I was called to see a 2½-year-old registered Guernsey heifer. The owner reported that "she had not been doing right" since calving one month previously; during the preceding few days, her milk production had dropped abruptly and she would eat nothing but a small amount of hay. Examination revealed extreme dullness, heart rate 90, temperature 102.5 F., moderate ketonuria, slight rumen motility, cold extremities, and fetid diarrhea. Dextrose intravenously, penicillin intramuscularly, and stimulants were administered.

Two days later, her temperature was 101.5 F., heart rate 110; there was extreme anemia and she was passing dark-colored tarry feces with a bad odor. Rumen motility had stopped. An abomasal ulcer was suspected. Treatment for the next three days consisted of the daily intravenous administration of 60 cc. Klot,* 500 cc. dextrose, 250 cc. calcium-dextrose solution, 1,000 cc. electrolytes, 1,000 cc. blood, as well as other stimulants. Heart and respiratory rates continued to increase and the heifer became weaker. The feces were thinner but the dark color, tarry consistency, fetid odor, and appearance of partially-digested blood remained.

On the fourth day, it was decided to attempt surgery according to a method previ-

Dr. Binks is a general practitioner in Lawrenceburg, Ky.
The author thanks Dr. L. S. Shirrell for taking the photographs.

*Klot (7.0% n-butyl alcohol and 0.002% dimethyltoluthionine chloride) is produced by Warren-Teed Products Co., Columbus, Ohio.

Fig. 1—External view of a reticular ulcer in a heifer.

Fig. 2—Internal view of the reticulum shown in figure 1; the mucous membrane surrounding the ulcer is eroded and necrotic.

ously described.[3,4] Two other veterinarians** were to assist.

On opening the peritoneal cavity, a diffuse fibrinous peritonitis was apparent. When the hand was inserted for exploratory purposes and moved anterior to the reticulum, loose ingesta in large quantities suddenly filled the floor of the abdominal cavity and drained to the outside through the surgical incision. Euthanasia and necropsy were performed.

LESIONS

Peritonitis was generalized. The spleen was enlarged and friable; the liver showed a slight yellowish discoloration; the kidneys and intestines were normal except for the peritonitis. There was a perforating ulcer about 3 cm. in diameter, approximately 5 cm. anterior to the ruminoreticular fold on the left lateral wall of the reticulum (fig. 1). For a distance of approximately 3 cm. around the perforation, the mucous membrane was eroded and necrotic (fig. 2). Two veins, each about 1 mm. in diameter, led from the perforation and were completely eroded—this obviously being the main source of hemorrhage. It is theorized that the perforation in the reticulum was partially sealed by fibrinous adhesions at its serosal margins to the abdominal surface of the diaphragm, and the manual exploration caused the breakdown of these adhesions, thus allowing the sudden and gross flow of ingesta into the abdominal cavity.

The inside of the abomasum also showed an ulcerated area about 15.0 cm. long and 7.5 cm. wide. The degree of ulceration varied from involvement of the mucosa to erosion of the underlying musculature. Two of the plica in this area were completely eroded for a distance of about 7.5 cm. The ulcerated area ended abruptly and the rest of the mucous membrane was apparently normal.

A thorough search of the interior of the rumen, omasum, and parts of the intestine revealed no other abnormalities. There was no evidence of foreign body penetration.

CONCLUSIONS

From this case and others recently described in the literature, it would seem that bleeding ulcers of the bovine stomach present a fairly uniform set of clinical signs, this apparently being the terminal stage of a chronic pathological process of unknown cause.

In my opinion, this case would have been inoperable at any stage, due to the extent of the various ulcers.

**Dr. L. S. Shirrell, Frankfort, Ky., and Dr. R. D. Zinn, Lexington, Ky.

Further study regarding the cause, early diagnosis, and treatment of this condition seems warranted.

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Wild Deer as Carriers of Anaplasmosis in California

Current thinking on the eventual control of anaplasmosis in cattle is directed toward detection of healthy carrier cattle by means of the complement-fixation test, followed by their isolation or slaughter. Control of the disease by these means could be expected to progress more satisfactorily if cattle were assumed to be the only important host for this disease agent. However, in the United States there is uncertainty regarding hosts other than cattle.

The occurrence of latent anaplasmosis infection among Columbian black-tailed deer was investigated in three areas of California. Whole blood was inoculated into splenectomized calves either as a pooled sample from 2 or more deer or as blood from a single deer. Of 40 calves inoculated, 29 transmissions of anaplasmosis were obtained. There were ten transmissions in ten attempts with pooled blood and 19 transmissions in 30 attempts with blood from single deer. This high incidence of carriers could not be detected by blood smear examination for Anaplasma bodies or by the complement-fixation test. The serological test titers were never higher than 2+, at the 1:15 serum dilution, in the 136 wild deer serums tested.

Strains of *Anaplasma marginale* isolated from deer by means of calf inoculation were readily passed back to deer and then again to cattle. Circumstances indicated that the agent can be maintained among deer in the absence of cattle.

Disclosure of a high rate of latent infection among wild deer has important implications regarding procedures for the control of anaplasmosis.—*J. W. Osebold, Davis, Calif., at the 1959 Midwinter Conference of the California V.M.A.*

Etiology and Control of Avian Vibrionic Hepatitis

Avian vibrionic hepatitis is an infectious disease of chickens characterized by degenerative changes in the liver and, less frequently, in the heart and other organs. It is due to a Vibrio which causes a systemic infection in chickens of all ages. The agent can be isolated by means of artificial mediums or 6- or 7-day-old chicken embryos. Bile is often a rich source of the agent and it may be grown in thiol, thioglycollate with serum, and on blood and chicken infusion agars under reduced oxygen tension. The chicken embryo appears to be a somewhat more sensitive indicator host for primary isolation.

For mass medication, furazolidone, at therapeutic levels, significantly altered the course of the disease and proved most satisfactory. Erythromycin given in the drinking water was therapeutically active, whereas chlortetracycline, oxytetracycline, and nitrofurazone were ineffective. As little immunity is apparent following infection, the possibility of a relapse, or reinfection, should be considered.

Most strains of the agent, when tested *in vitro*, were sensitive to oxytetracycline, chlortetracycline, erythromycin, furazolidone, dyhydrostreptomycin, and magnamycin. Penicillin had some slight inhibitory action, whereas polymyxin B sulfate, bacitracin, chloramphenicol, sodium arsanilate, albamycin, and neomycin showed little or no effect.

Dissemination or spread of the causal agent under field conditions is not clearly understood. There is a distinct need for a serological test in detecting evidence of infection.—*R. W. Winterfield, D.V.M., Madison, Wis., at the 1959 Western Poultry Disease Conference, Davis, Calif.*

Dye in Antibiotics for Use in Udders

To aid in detecting antibiotic content of milk, the oil- and water-soluble fluorescein marker was superior to all other dye materials tested. However, the addition of such nontherapeutic ingredients might result in residues in the milk.—*J. Dai. Sci., 42, (Jan., 1959): 202.*

Lungworm, *Filaroides Osleri*, in a Dog in Colorado

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THE FINDING of a case of verminous bronchitis in a dog in Colorado led to an investigation of the status of the present knowledge of *Filaroides osleri* (Cobbold, 1879) in this country and elsewhere.

REPORTS OF OCCURRENCE

This parasite is world-wide in distribution. Judging by the small amount of literature on the subject, it appears to be scarce, although it has been suggested[30] that it may be more common than suspected and that its presence should be considered in outbreaks of coughing among dogs.

Verminous bronchitis was reported[24] in 30 dogs from Montreal, Canada, and provided material from which the worms were named.[6]

Other reports of its occurrence in dogs and coyotes followed. One report[4] described the lungs of an infected dog in Germany, and another[27] noted a chronic cough and dyspnea in 2 dogs. It was also found in dogs in India and Mexico.[5,10]

In the United States, the first report[19] of its occurrence, in New York state, concerned 3 emaciated beagles which were coughing. It was reported under the name of *Oslerus osleri* from dogs and coyotes in Texas.[26] Other infections reported were in a hunting dog in Oklahoma,[1] a dog of unknown origin in Ohio,[18] and dogs in Hawaii and Panama.[7]

A number of cases have been reported from Great Britain,[2,9,12,13,21,24] Scotland,[30] South Africa,[23,29] New Zealand,[20] and Australia.[14]

One worker[11] proposed the generic name Oslerus to receive *Filaris osleri* Cobbold. Later, another[28] transferred *O. osleri* to the genus Filaroides Beneden, 1858, thus making it *F. osleri* (Cobbold, 1879).

CASE REPORT

A 4-year-old mongrel dog originating in Browning, Mont., died of strychnine poisoning in Fort Collins, Colo., and lesions of *F. osleri* containing many of the nematodes were found at the junction of the bronchi and trachea (fig. 1). No eggs of *F. osleri* were found in the feces of a second dog in the same household.

Clinical Signs.—The dog was not emaciated but the owner stated that it had shown respiratory distress, as evidenced by coughing and dyspnea, for three years.

Gross Pathology.—On the mucosal surface of the trachea at the level of bifurcation, 21 hyperemic granulomatous nodules were present. The nodules ranged from minute to 15 by 15 by 3 mm. in size. Many had constricted bases and were pedunculated. Their surfaces were rough, and numerous nematodes protruded from them (fig. 1).

The nodules partially occluded many of the lesser bronchial openings and the orifice of the left apical bronchus was completely occluded. This condition could conceivably account for the respiratory difficulty experienced by the dog. A nodule 5 by 5 by 5 mm. and without worms was in the left apical lobe of the lung.

Histopathology.—Examination of a bronchial nodule revealed a granulomatous lesion characterized by a loose network of supportive collagenous fibers containing numerous mononuclear macrophages and plasma cells which were greater in number than the lymphocytes. No eosinophils were seen. The collagenous fibers were more dense around the sections of gravid nematodes than elsewhere (fig. 2). In keeping with the granulomatous character of the lesion, many small capillaries were present and the surface was devoid of respiratory epithelium. An inflammatory reaction extended peripherally to the bronchial cartilage.

The nodule in the lung appeared similar microscopically to the lesions in the trachea except that neutrophils and hemorrhagic foci appeared in the area. No nematodes were seen (fig. 3).

A detailed histopathological description of the lesions in dogs has been reported by others.[30]

From the Department of Zoology, Colorado State University, Fort Collins; Dr. Bracken is now at Washington State College, Pullman.

DESCRIPTION OF THE PARASITE

A description of the worms has been published.[30] Adult males ranged from 5.6 to 7.0 mm. long. The posterior end was bluntly pointed and nonbursate. A gubernaculum 36.6 to 51.2 μ in length and two small equal spicules 99.2 to 112.8 μ long were present.

The females measured 10.0 to 13.5 mm. long. The uterus, which contained developed larvae, extended forward to near the base of the esophagus. The vulva and anus were close together in a cleft near the posterior end of the body.

First stage larvae recovered from the trachea by means of a swab measured 236.6 to 266.6 μ in length. The esophagus was rhabditiform and somewhat obscure. The tail was pointed and often showed a distinct kink. Similar but slightly larger larvae (325.5 to 378.2 μ) found in the feces showed a more distinct esophagus measuring 103.7 to 111.6 μ long, with a posterior bulb 18.3 μ long.

Two attempts to elucidate the life cycle have been reported. One worker[3] collected various invertebrates on premises where dogs infected with *F. osleri* were kept and fed them to uninfected pups, in an unsuccessful effort to produce the disease. Another[22] fed several hundred 10-day-old larvae of *F. osleri* to a dog but, at necropsy four months later, there was no sign of infection.

While the life cycle of *F. osleri* remains

Fig. 1—Trachea of dog at level of bifurcation, showing the nodular lesions, some of which have adult worms, Filaroides osleri, protruding from them.

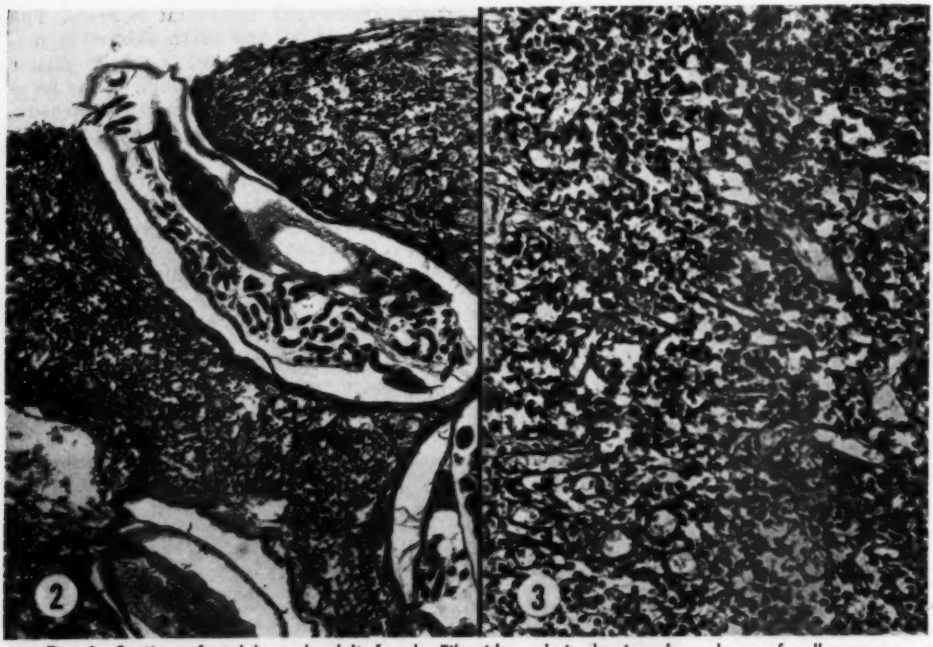

Fig. 2—Section of nodule and adult female Filaroides osleri, showing dense layer of collagenous fibers around the worm, numerous capillaries, and the absence of respiratory epithelium.

Fig. 3—Section of nodule with worm in lung, similar to the lesions in the trachea except neutrophils and hemorrhagic foci are present.

unsolved, those of closely related species occurring in badgers, polecats, and mink are known and may serve as an indication of what that of *F. osleri* may be like. The first stage of the badger lungworm, *Filaroides falciformes*, burrows into slugs (*Deroceras* (Agriolimax) *agrestis, Cepea hortensis, C. nemoralis*) and land snails (*Fruticicola hispida* which probably is *Hygromia hispida, Euomphalia strigella,* and *Succinea putris*) where they develop into infective third stage larvae.[31,32] Infection of the badger occurs when snails harboring third stage larvae are swallowed.

The slug *Agriolimax reticulatus* was infected with larvae of *Filaroides martis* from the feces of a polecat.[8] The larvae reached infectivity in the slug in 16 to 18 days. When fed to mink, they developed to maturity in 19 to 25 days; when fed to mice, they migrated to and encysted in the liver. When these infected mice, which served as transport hosts, were fed to polecats and mink, infections of lungworms developed and larvae appeared in their feces 21 to 24 days later.

DISCUSSION

Clinical Signs.—A considerable number of cases of filaroidiasis (osleri) have been reported from many parts of the world. From these a number of observations on the signs of the disease have been made. They are in general agreement.

One worker[24] reported that 21 of 30 infected dogs observed by him died. He described the signs of the 5 animals seen by him during their illness. Reviewing these records, another worker[19] concluded that these dogs had died of distemper and that the worms were coincidental.

The one predominant sign reported by observers is a chronic cough.[1,2,19,27,29,30] Other symptoms include retching or vomiting after coughing,[19,29] difficulty in breathing ranging from slight to severe,[1,19,20,27,30] and emaciation in some cases.[1,19,20,29]

Treatment.—Intratracheal injections of

5 per cent phenol have given relief in some cases.[2]

Injections of anthiomaline or stibophen (Fuadin*) for nine to 12 weeks in weekly doses of 5 ml. for a dog weighing 30 to 45 kg. were reported effective, cheap, and safe.[17] Diethylcarbamazine citrate (Hetrazan**), given in 10-mg. doses *per os* three times daily for one week, together with 1.5 to 2.0 ml. of anthiomaline or stibophen, was usually effective. It may be necessary to repeat the dose after two to three weeks.

According to another report,[9] three intramuscular injections of 1 to 2 ml. of anthiomaline at three-day intervals caused severe depression, and oral treatment with diethylcarbamazine citrate did not give consistently good results.

Still another worker[16] stated that there is no effective treatment.

Diagnosis.—Fecal examinations with the microscope were reported[2] not reliable in dogs found at postmortem to have been infected.

One worker[18] anesthetized the dogs and then swabbed the distal portion of the trachea with a moist piece of gauze on a wire. The mucus on the swab was squeezed or rinsed into 6 to 10 ml. of water and centrifuged. The thin-shelled, embryonated eggs were easily seen and identified under low magnification. Others[30] recommended bronchoscopy together with bronchial swabs, fecal examination, and the presence of clinical signs as a means of diagnosis.

SUMMARY

Necropsy examination of a dog dead from poisoning revealed verminous bronchitis caused by *Filaroides osleri*, many of which were found in lesions near the bifurcation of the trachea. Although not emaciated, the dog had coughed frequently and been dyspneic for three years.

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*Fuadin is produced by Winthrop Labs., Inc., New York, N.Y.

**Hetrazan is produced by American Cyanamid Co., New York, N.Y.

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Comparative Treatment of Canine Tracheobronchitis

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THE DIAGNOSIS and treatment of inflammatory conditions of the canine trachea and bronchi rank high among the daily enigmas which confront small animal practitioners and veterinarians charged with the care of dogs in large kennels such as those of humane societies and medical research institutions.

Tracheobronchitis may be part of a generalized respiratory disease or appear as the condition popularly known as kennel cough. According to one writer,[1] "Disease seldom affects the trachea without involvement of the bronchi." Specifically, tracheobronchitis manifests itself as a harsh, dry paroxysmal cough, followed by retching or gagging as if the dog were trying to "bring up something." Occasionally, a small amount of mucus or foamy semipurulent material is forced up from the larynx. The dog in all other respects appears normal and the paroxysm of coughing may be spontaneous, brought on by excitement, or by manipulation over the trachea. The exact cause of this condition is not known. Since it readily spreads through a group of dogs, it is considered infectious, possibly of bacterial,[1,9] viral,[8] or mixed origin. The incubation period is five to ten days[5] and the disease is self-limiting, lasting between two and three weeks.[1]

For the past several years, the boarding and holding dogs of the local humane society have been plagued with an insidious respiratory condition exhibiting the characteristics of tracheobronchitis—the harsh, dry cough, gag reflex, and rapid spread to newcomers.

Recent reports in the veterinary literature indicated that nitrofurantoin (Furadantin*)[6,7,10] and prednisone-penicillin (Meticillin*)[3] were effective in the treatment of canine tracheobronchitis. The problem with dogs maintained at the Humane Society of Rochester and Monroe County provided the authors with an excellent opportunity to compare these therapeutic agents.

PROCEDURE

Only dogs having a harsh dry cough of two to three days' duration and no nasal or ocular discharge were used. Medication was rotated, *i.e.*, the first dog received nitrofurantoin, the next one nitrofurantoin with dextrose, the third prednisone-penicillin. Because of the occasional reports of vomiting in dogs given nitrofurantoin, dextrose was incorporated with the agent since some unpublished work suggested that this may reduce such emesis.

Nitrofurantoin was given *per os*, 2 to 4 mg. per pound of body weight three times daily; prednisone-penicillin, intamuscularly, 1 ml. per 25 pounds of body weight daily or on alternate days.[3] This sequence was repeated throughout the course of the investigation. Concurrently-infected dogs were left untreated to allow observation of the normal course of the condition which lasted one to five weeks, mostly between two and three weeks. This type of case selection resulted in adequate randomization according to age and weight.

Dr. Michaelson is assistant professor, School of Medicine and Dentistry, University of Rochester, Rochester, N.Y., and Dr. Covert (deceased) was with the Humane Society of Rochester and Monroe County, Rochester, N.Y.

*Furadantin was furnished by Eaton Labs., Norwich, N.Y.; Meticillin by Schering Corp., Bloomfield, N.J.

RESULTS

The results of this study are summarized (table 1). The data were analyzed statistically for levels of significance.

Results indicated that any of the three treatments appeared to shorten recovery time. Treatment was considered beneficial if the cough was suppressed or noticeably diminished within seven days. Although a larger percentage of dogs responded favorably to nitrofurantoin (81%) or to nitrofurantoin with dextrose (84%) than to prednisone-penicillin (56%), this difference is not significant when tested by chi-square for odds of 19 in 20.

A comparison of the average number of days required to alleviate the coughing indicated a significant difference between nitrofurantoin (3.1 to 3.5 days) and prednisone-penicillin (5.7 days). At the 5 per cent level, Student's "t" test indicated that the difference between both nitrofurantoin preparations and prednisone-penicillin in the number of days required to alleviate the coughing was significant.

There was no evidence of toxicosis or side reactions other than occasional vomiting in 2 of the 16 dogs treated with nitrofurantoin, but emesis ceased when nitrofurantoin was replaced with nitrofurantoin-dextrose.

TABLE 1—Results of Canine Tracheobronchitis Therapy

Drug	Total No. dogs treated	Mean age (range)	Mean weight (range)	Days of treatment (range)	No. relieved (%)	No. of days required for suppression of cough
Nitrofurantoin	16	2.25 (4 mo.-8 yr.)	29 (12-70 lb.)	5.25 (3-10)	13 (81%)	3.1 ± 0.24*
Nitrofurantoin with dextrose	19	2.5 (10 wk.-8 yr.)	31 (10-70 lb.)	5.16 (3-11)	16 (84%)	3.5 ± 0.35*
Prednisone-penicillin	16	2.0 (6 wk.-7 yr.)	30 (10-75 lb.)	7.25 (3-15)	9 (56%)	5.7 ± 0.83*

*(Mean ± standard error of mean).

DISCUSSION

It is of interest to consider the mode of action of these preparations in the treatment of canine tracheobronchitis. Penicillin is known to be effective against organisms of the following genera, which potentially cause respiratory infection: Micrococcus, Diplococcus, Streptococcus, Corynebacterium, and Klebsiella. *Brucella* (*bordetella* and *bronchiseptica*) and Hemophilus are less sensitive to penicillin. Any of these organisms could be factors in canine tracheobronchitis, altough none have been definitely incriminated. The factor of stress in tracheobronchitis, where the use of prednisone would be rational, is difficult to assess, since the animal, except for the paroxysmal coughing, appears physically well and there is no fever or impairment of appetite.

Nitrofurantoin is a synthetic antimicrobial agent, one of the nitrofurans. It was originally introduced in human[4] and animal[2] medicine for the treatment of urinary tract infections. The drug possesses a wide antibacterial spectrum and appears to lack the bacterial-resistance-producing potential of penicillin and other antibiotics. It is quite possible that nitrofurantoin is more active than penicillin against a specific microbe or group of microbes causing tracheobronchitis, or that it does not induce resistance in the involved bacteria as may occur with repeated administration of penicillin.

SUMMARY

Dogs (51) with signs suggestive of infectious tracheobronchitis were treated with nitrofurantoin (Furadantin), nitrofurantoin-dextrose, or prednisone-penicillin (Meticillin). Statistical analysis of the results indicates that both nitrofurantoin and prednisone-penicillin favorably influenced the course of the disease. The coughing was suppressed more rapidly with nitrofurantoin than with prednisone-penicillin.

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Booster Effect of Distemper Antigen

Passive antibodies, gained either from an immune dam or the antiserum, may interfere with the active immune response of pups to distemper antigen. In one reported experiment, about a third of a group of actively immune pups did not develop an increase in antibody titer following a later dose of egg-adapted virus. These findings have apparently caused some authors to believe that distemper antigens do not produce a booster effect.

Work done in our laboratories, however, shows that a dose of egg-adapted distemper virus, given to 32 dogs about six months following the first dose of the same virus, produced an average increase in antibody titer of 250 per cent. Thus, there was a significant booster effect in immune dogs. This is the effect to be expected, based on immunological principles, because the anamnestic effect occurs only in actively immunized animals and not in the passively immune.—*R. V. Johnston, D.V.M., Indianapolis, Ind., at the 75th Annual Convention of the Indiana V.M.A.*

Laboratory Evaluation and Field Use of Laryngotracheitis Vaccine

The incidence of laryngotracheitis in vaccinated birds, with the isolation of laryngotracheitis viruses with peculiar characteristics, indicates the necessity for a restudy of the disease and better methods to prepare and evaluate vaccines for its control. For many years, laryngotracheitis vaccine, produced and laboratory-evaluated by methods shown by field results to be critical in determining safety and immunizing potency, had performed so well in mass field use that overconfidence developed in our ability to control the disease.

Some factors considered important in immunization against laryngotracheitis are: (1) strain of virus used in preparation of the product; (2) method of processing, including stabilizing and drying to preserve the highest possible virus titer in the finished product; (3) freedom of the vaccine from pathogenic contaminants which might conceivably alter the immune response; (4) condition of flock, particularly freedom from extraneous diseases that might affect the immune response; and (5) technique of vaccination (probably the most variable factor in the whole procedure).

It is hoped that additional work with laryngotracheitis strains will indicate which strains are superior antigens and will give a more dependable immune response against all known field laryngotracheitis virus exposures.—*N. H. Casselberry, D.V.M., Berkeley, Calif., at the 1959 Western Poultry Disease Conference, Davis Calif.*

Effect of Grain Feeding on Udder Edema, Ketosis, and Milk Production

During the eight-week dry period, 63 cows of four dairy breeds were allotted to three groups which were fed either no grain, 6 lb. daily, or 15 lb. daily. Silage was fed according to body weight and hay was fed ad libitum. There was no significant difference in udder edema, or in milk production and butterfat content. The edema was correlated with milk production but not with body condition.

There were 2 cases of ketosis in each grain-fed group and 1 in the group fed no grain. Blood sugar and ketone levels were about the same in each group. The weight in calves was not affected.—*J. Dai. Sci., 42, (Jan., 1959):170.*

Pityriasis Rosea in Man

Pityriasis rosea is a rapidly developing, symmetrical skin lesion, somewhat resembling ringworm, which confers immunity. It is probably of viral origin, but no specific agent has been demonstrated.—*J.Am.M.A., 168, (Dec. 6, 1958): 1958.*

Let's Write More Clearly

Fifty years ago, a writer or speaker could gain much by the use of big words. An impressive vocabulary was a badge of education. It could get better jobs and lead to higher social standing. And, if the number of abstract and seldom used words reached the point that the writer was hardly understood, then the masses thought him to be educated.

Today, it's different. Most people have a fair degree of education and the writer who chooses long abstract words of Latin origin, rather than short concise Anglo-Saxon words, is apt to be considered pompous. Worse, he may become a writer without readers.

Some of the best writers in our profession are the senior members who have no need to impress anyone. Their purpose in writing is simply to get the facts to the reader. They know their subject so well that they make simple direct statements without obscuring the facts with qualifying phrases.

Some poor writers will become fair or even good writers when they stop attempting to write impressively and begin to bend their efforts toward a clear and concise style.

The most difficult and complex problems in the world have been discussed in easy-to-understand terms. The best selling books are, with few exceptions, worded clearly and simply. For example, "How to Win Friends and Influence People," "Gone with the Wind," and "Uncle Tom's Cabin" all require no more than eighth-grade reading skill.

The veterinary author who uses big words and complicated sentences because he feels obliged to educate the readers, in addition to stating the facts about a disease, may labor long and hard, never aware that even if the paper gets past the editor, few people will take the time to read it.

Readability Index

Robert Gunning, in his book, "The Technique of Clear Writing," describes a way to judge the quality of any piece of writing from the standpoint of easy readability. First, he chooses a typical passage of at least 100 words and counts the average number of words per sentence in the passage. To this figure, he adds the percentage of words in the passage that have more than two syllables. The sum of these two figures is multiplied by .4, and the result is a number which Gunning calls "The Fog Index."

This readability index is, roughly, the grade level of the readers who would not find the passage difficult to read. For example, an index of 10 means that the passage would not be difficult for a sophomore in high school.

The hard cold facts of the publishing business have proved that if magazines are to be financially successful, they must not range above this level of readability. Although we are not prepared to say what the readability indexes of JOURNAL articles should be, it seems doubtful that they should exceed 15. The average index of several passages in this editorial is 9.4.

The following passages, published in a veterinary journal, have a readability index of 24!

> Regardless of the lower population [of the species], the incidence of skin disease [that year] was slightly the highest noted, yet, with continued insignificance of predation and the diminishing role of intraspecific strife and miscellaneous mortality, the season's net productivity per adult female was the highest.
>
> There is assuredly very much about population phenomena of prolific higher vertebrates that, at present, we can hardly begin to appraise. Compensatory trends in both reproductive rates of the adults and loss rates of the young illustrate the dangers of assuming that numerical and percentage values established for a mortality factor are necessarily a valid measure of population significance of that factor.

These sentences may be restated in the following way. Whether the author's intended meaning is conveyed, only he can say.

> In the year of fewest adults, the reproduction rate and incidence of skin disease were highest and losses from predation, fighting, and disease were lowest.
>
> Population changes of prolific mammals are not well understood. Because the reproduction rate of adults and death rate of the young have a compensatory relationship, a reliable mortality factor cannot be stated simply as a numeral.

As veterinarians, we are seldom writing for the ages. We don't need to lift up our colleagues by their literary bootstraps. If there's something worth writing about, we should state it clearly and concisely, so that busy practitioners will read it. If the author strays too far afield, the editor represents the readers in calling him back.

Current Literature

Abstracts

Chemical Analysis of Bovine Urinary Calculi

In the course of relating the organic matrix of uroliths to the mucoprotein fractions of urine, the carbohydrates and amino acids of the stones were identified and measured. Hexose (0.56-0.87% of the stones), pentose, and methyl pentose were found, but deoxypentose and hexuronic acid were absent. Hexosamine (0.2%) and sialic acid (0.03%) were present.

The individual hexoses identified were, in order of abundance, hexosamine, glucose, galactose, mannose, and rhamnose. Sixteen amino acids were identified in all stones, but there were marked quantitative differences between stones. Extraction of the ground stones with 10 per cent $CaCl_2$ at pH 6.8 released hexose-containing material.—[*R. F. Keeler and Karl F. Swingle: A Partial Chemical Analysis of the Mucoprotein of Siliceous Urinary Calculi of Bovine Origin. Am. J. Vet. Res., 20, (March, 1959): 249-254.*]

Histopathology of Ornithosis in Turkeys

The histopathological lesions observed in 500 turkeys, aged 1 through 24 weeks, inoculated intracheally with the Jo strain of the ornithosis agent included epitheloid pneumonia (pneumonitis), tracheitis, hepatitis, myocarditis, splenitis, and orchitis, and fibrinous to fibrinopurulent inflammation of the air sacs and serous membranes.

The changes in the parenchymatous organs were both proliferative and necrotizing, the latter occurring most commonly in the younger poults. The large mononuclear macrophage was the most common cell type in the inflammatory exudates. Hemosiderosis of the spleen and liver gave evidence of blood destruction. Elementary bodies, varying in size from approximately 0.1 to 1.0 μ and occurring in clusters, were observed in exudative macrophages, reticuloendothelial cells of the spleen, Kupffer's cells of the liver, and germinal epithelium of the seminiferous tubules.

Except for the absence of focal areas of necrosis in the liver and the occurrence of orchitis in sexually mature birds, the lesions produced by ornithosis infection in turkeys are similar to those occurring in ornithosis of other species.—[*J. N. Beasley, D. E. Davis, and L. C. Grumbles: Preliminary Studies on the Histopathology of Experimental Ornithosis in Turkeys. Am. J. Vet. Res., 20, (March, 1959): 341-349.*]

Procurement of Lambs by Hysterectomy and Their Isolation

Pregnant ewes, six to eight days prior to term, were anesthetized by inhalation of carbon dioxide. The gravid uterus was removed from the abdomen and delivered into a sterile hood where the lamb was released. Forced inflation of the lungs with a Tycos rubber bulb was essential for establishment of respiration. The umbilical cord was ligated, cut, and disinfected with saturated solution of alum in tincture of iodine. Cleaning and drying of the lamb was done with sterile towels, after which the lamb was placed in a sterile cotton bag for transportation to the isolation units. Individual fiberglass isolation units with filtered air ventilation were used.

The lambs were fed three times daily with about 3 oz. of homogenized, pasteurized cows' milk to which had been added 1 egg and 5 ml. of a mineral mix per quart.

Lambs delivered by hysterectomy and raised in isolation are protected from environmental infections and provide the research worker in large animal diseases with a uniformly susceptible experimental animal.—[*Oliver D. Grace, Norman R. Underdahl, and George A. Young: Procurement of Lambs by Hysterectomy and Their Isolation. Am. J. Vet. Res. 20, (March, 1959): 239-241.*]

Books and Reports

Catalogue of Veterinary Films

The Permanent Committee for the International Veterinary Congresses hopes to make available early in 1959 its definitive catalogue of veterinary films. The price will be about 10*s* ($1.42) per copy, and those interested are asked to communicate with Dr. H. E. Kingman, Jr., executive secretary, AVMA, 600 S. Michigan Ave., Chicago 5, Ill., indicating the number of copies they are likely to require. No money should be sent at this time.—*Jac. Jansen, General-Secretary, Permanent Committee for the International Veterinary Congresses.*

Outline of Parasites

The new fifth edition of this manual includes newly discovered parasites, newly reported hosts, and new locations in hosts. Designed primarily for use by classes in veterinary parasitology, previous editions have found wide use among those engaged in parasitological research involving both domesticated and wild animal species.

The parasites listed are those reported as occurring in continental North America.—[*Outline of Parasites Reported for Domestic Animals in North America. By E. A. Benbrook. 67 pages. Iowa State College Press, Ames, Iowa, 1958. Price $2.25.*]

Veterinary Vade-Mecum

The tenth edition of this book on pharmacology, posology, and index of animal diseases contains chapters on standard therapeutic methods, hydrotherapy, homeopathy, serotherapy, etc., as well as a section on various diagnostic procedures.—[*Vade-Mecum du Vétérinaire (in French). By A. Brion 720 pages. Vigot Frères, 23, Rue de l'Ecole de Medecine, Paris 6, France. 1958. Price not given.*]

—JOSEPH P. SCOTT.

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THE NEWS

Dr. Carl F. Schlotthauer Retires

Dr. Carl F. Schlotthauer, a member of the staff of the Mayo Clinic since 1924, and professor of veterinary medicine in the Mayo Foundation, Graduate School, University of Minnesota, retired from those institutions on Dec. 31, 1958.

Dr. Carl F. Schlotthauer

A graduate of St. Joseph Veterinary College in 1923, Dr. Schlotthauer went to Rochester in 1924 as an assistant in veterinary medicine in the Mayo Foundation, was appointed a first assistant in 1926, and instructor in veterinary medicine in October, 1927. He was advanced to assistant professor in 1932, associate professor in 1937, and professor in 1945.

During World War II, Dr. Schlotthauer served as a member of the Minnesota State Committee for the procurement and assignment of veterinarians. He served as vice-president of the AVMA in 1942, chairman of the AVMA Small Animal Section (1932-1933), as a member of the Research Council (1942-1951), and chairman of the Committee on Public Relations (1943-1944). In 1950, Dr. Schlotthauer was elected to the executive board of the AVMA to represent District V.

From 1942 to 1944, he was chairman of the committee on neurology of the American Animal Hospital Association, and in 1945, he became president of the Minnesota State V.M.A. Dr. Schlotthauer was presented the Mark L. Morris Animal Foundation Small Animal Award in 1958, by the American Animal Hospital Foundation (*see* the JOURNAL, June 15, 1958, pp. 543-544). He is author of some 177 contributions to veterinary literature.

Dr. Schlotthauer has two sons, both of whom are veterinarians: Dr. John C. (MIN '34) of St. Paul, Minn.; and Dr. Charles G. (MIN '57) Pine Island, Minn.

Colonel Rust Retires from Armed Forces Institute of Pathology

Colonel John H. Rust (KSC '32) retired recently as chief of the veterinary pathology section and the laboratory animal branch at the Armed Forces Institute of Pathology.

After entering the Army in 1935, Colonel Rust served as veterinary officer, laboratory officer, and consultant in veterinary medicine at stations both in the United States and abroad. From 1950 to 1954, he was professor of veterinary pathology with the joint, University of Tennessee-Atomic Energy Commission's agricultural research program, at Oak Ridge. He began his assignment at A.F.I.P. in August, 1958.

Colonel John H. Rust

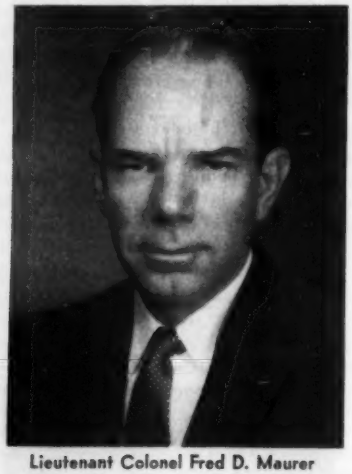
Colonel Rust is presently chairman of the Atomic Energy Commission's life sciences exhibit committee. He is a consultant to the University of Tennessee and to the National Academy of Science subcommittee on acute and long-term hematological effects of atomic radiation. He recently served as a member of the Research Council of the AVMA.

Since his retirement, Colonel Rust has joined the Massachusetts Institute of Technology as lecturer in food technology.

Colonel Maurer, New Chief of A. F. I. P.'s Veterinary Section

Lieutenant Colonel Fred D. Maurer was named chief of the veterinary section of the Armed Forces Institute of Pathology, upon Col. John H. Rust's recent retirement (*see* p. 339).

Colonel Maurer has been assistant chief of the veterinary section and chief of the virology section at the Institute since 1954. In addition to his new position, he will retain his virology duties and become chief of the laboratory animal branch.



Lieutenant Colonel Fred D. Maurer

After receiving his B. S. degree from the University of Idaho, Colonel Maurer obtained his D.V.M. degree from Washington State College and his Ph.D. degree from the New York State Veterinary College at Cornell University. He also did a year of virology work at the Rockefeller Institute for Medical Research in New York.

AMONG THE STATES AND PROVINCES

California

Tulare County Association.—The following were elected as officers of the Tulare County V.M.A., effective January 1: Drs. L. H. Brazil, Tulare, president; F. A. Elliott, Porterville, vice-president; and J. W. Cole, Visalia, secretary.

s/JERROLD W. COLE, *Secretary.*

Florida

Dr. Charles Simpson Awarded "Special" Fellowship.—Dr. Charles F. Simpson (COR '43), professor of veterinary science, University of Florida, and former research fellow of the AVMA (*see* the JOURNAL, August, 1955, p. 160), has been awarded a "special" fellowship by the U. S. Public Health Service for advanced study in pathology at the University of Minnesota. He is doing his work under the direction of Dr. J. H. Sautter, College of Veterinary Medicine, and Dr. James Dawson, College of Medicine. Dr. Simpson will complete the requirements for a Ph.D. degree in pathology.

Dr. Charles F. Simpson

"Special" fellowships are awarded by the U. S. Public Health Service to a small group of exceptionally talented young medical scientists who have demonstrated unusual ability in their specialty.

s/W. R. PRITCHARD, *Head, Department Of Veterinary Science, University of Florida.*

Indiana

Seventh District Association.—The Seventh District Indiana V. M. A. met Nov. 21, 1958, at the Klusmeier Drive-Inn Restaurant in Linton.

Dr. R. C. Klussendorf, Commercial Solvents, Terre Haute, delivered an address and showed slides on "Stress in Animal Health." A question and answer period followed.

s/A. P. GRAY, *Secretary-Treasurer.*

Oklahoma

Dr. Goetsch Awarded National Science Foundation Fellowship.—Dr. Dennis D. Goetsch, assistant professor at Oklahoma State University's Department of Physiology & Pharmacology, was recently awarded a National Science Foundation faculty fellowship, which will enable him to pursue advanced study leading to a Ph.D. degree in Physiology at Oklahoma State University. He will begin his work June 1, 1959.

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Dr. Dennis D. Goetsch

The award matches the faculty member's salary for the 12-month term of the Fellowship plus necessary tuition costs up to a total of $12,000 per year.

Dr. Goetsch received his D.V.M. degree in 1952 and his M.S. degree in 1955 from Kansas State College. He was instructor and assistant professor in the Department of Physiology at K. S. C. from 1952 to 1956. After a year and a half of commercial work, Dr. Goetsch joined Oklahoma State University.

Dr. Goetsch's major field of interest is in energy metabolism and ketosis in ruminant animals.

Tennessee

Dr. S. H. Woods Receives State's Veterinarian of the Year Award.—Dr. Samuel H. Woods, Sr., Murfreesboro, was chosen the state's Veterinarian of the Year for 1958 and honored at a banquet given by the Tennessee V. M. A. at the Noel Hotel, Nashville, on January 12.

Dr. Woods received his D.V.M. degree in 1912 from Kansas City Veterinary College and has been engaged in general practice most of his professional life. He was one of the founders of the Tennessee V. M. A.

Dr. E. M. Spence (API '37), left, Jackson, president of the Tennessee V. M. A., awards Dr. S. H. Woods, Sr., a plaque as Veterinarian of the Year at a banquet held last January by the Association.

Texas

Dallas County Association.—The officers of the Dallas County V. M. A. for 1959 are: Drs. Herman F. Dieterich, Jr., Richardson, president; Frank Sims, Dallas, vice-president; James W. Ard, Dallas, recording secretary; and Frank N. Black, Dallas, corresponding secretary.

S/FRANK N. BLACK, *Corresponding Secretary.*

• • •

Women's Auxiliary.—Since the organization of the Women's Auxiliary to the Tarrant County V. M. A. four years ago, the Auxiliary has increased in membership and activities. An active participant in the newspaper clipping service for the AVMA, the Auxiliary has also made donations to both the national and the state auxiliaries. At present, the group is concentrating its interests in providing books for a library on an Indian reservation in Livingston, Texas.

Officers of the Tarrant County V.M.A. left to right —Mrs. James Regester, Mrs. Billy Y. Parker, Mrs. John Wilbur, Jr., Mrs. Philip James, and Mrs. James W. Heaton, Jr.

Officers for the Auxiliary for 1958-1959 are: Mrs. James W. Heaton, Jr., Fort Worth, president; Mrs. Philip M. James, Fort Worth, vice-president; Mrs. Billy Y. Parker, Fort Worth, secretary; Mrs. James A. Regester, Fort Worth, treasurer, and Mrs. John L. Wilbur, Jr., Fort Worth, historian.

S/MRS. LEON G. CLOUD, *Correspondent.*

STATE BOARD EXAMINATIONS

IOWA—June 1-2, 1959, Office of the Division of Animals Industry, State House, Des Moines, Iowa, not later than 8 o'clock on the morning of June 1. Further information may be obtained from Dr. A. L. Sundberg, chief, Division of Animal Industry, State House, Des Moines 19, Iowa.

KENTUCKY—June 17, 1959, State Capitol Building, Frankfort. Ky. Jack E. Winkler, secretary-treasurer, Kentucky Board of Veterinary Examiners, 319 Ann St., Frankfort, Ky.

OHIO—June 8-10, 1959, Sisson Hall, College of Veterinary Medicine, Ohio State University, Columbus, Ohio. Applicants must be present at 8 a. m. on the first day. Application forms may be obtained from the office of the Executive Secretary, Ohio Veterinary Medical Board, Room 720, Ohio Departments Building, Columbus 15. All application forms must be returned to the Secretary not later than May 4, 1959. Dr. H. G. Geyer, executive secretary.

NORTH CAROLINA—June 22-24, 1959, Morehead Biltmore Hotel, Morehead City, N. Car. Dr. James I. Cornwell, secretary-treasurer, North Carolina State Veterinary Examining Board, 65 Beverly Rd., Beverly Hills, Asheville, N. Car.

TEXAS—Next licensing examination will be held June 1-3, 1959, A. & M. College of Texas, College Station. The completed application must be received in the Board office not later than 30 days before the examination date. Applications should be sent to Mr. T. D. Weaver, 207 Capital National Bank Building, Austin 16, executive secretary, State Board of Veterinary Medical Examiners.

UTAH—June 11-12, 1959, Utah State Capitol Building, Salt Lake City, Utah. Dr. Wayne Binns, chairman, Utah Veterinary Examining Board, 555 North Third East, Logan, Utah.

DEATHS

Star indicates member of AVMA

Richard Earl Butler (MCK '13), 73, Sparta, Wis., died Dec. 27, 1958, after several months' illness. A veteran of World War I, Dr. Butler was in charge of state mobile dairy testing laboratories for many years. He also served as deputy marshal for the state for four years.

John F. Creedon (NYA '07), 73, formerly of Wilmington, Del., died December 30, in Chattanooga, Tenn., where he had lived since September.

Dr. Creedon had been with the Bureau of Animal Industry, U.S.D.A., from 1914 until his retirement in 1953.

★**Walter H. Hannemann** (KCV '18), 62, Kansas City, Kan., president of the National Association of Federal Veterinarians, died suddenly Dec. 1, 1958, at Bethany Hospital, Kansas City, following a heart attack.

A Lincoln County, Kan., farm boy, he graduated from Kansas City Veterinary College in 1918. Engaged in federal meat inspection since his graduation, he was stationed at Armour & Company at the time of his death.

Joining the National Association of Federal Veterinarians in 1918, Dr. Hannemann had served the organization as vice-president at large and chairman of the membership committee before he was elected president at the Association's fortieth annual convention in St. Louis, in November, 1957. Last year at the forty-first annual convention, he was reelected president by another unanimous vote.

Dr. Walter H. Hannemann

Dr. Hannemann had enlisted in the Veterinary Reserve Corps sometime after graduation and was a former president of the Wyandotte County Reserve Officers Corps. He had also done work on the Drought Relief Program in Nevada and the brucellosis eradication program.

Ellis W. Kern (KSC '14), 68, San Antonio, Texas, died at the Brooks Army Hospital on January 18. He had suffered a stroke in April, 1951, from which he never fully recovered.

Dr. Kern had served with the Army Veterinary Corps during World War I, and had tested horses for dourine on Indian reservations in New Mexico and Arizona before engaging in meat inspection for the federal government.

Other Deaths Reported.—The following deaths have been reported. The usual information for an obituary was not supplied.

Earle Linwood Kittrell (KCV '17), Augusta, Ark., died sometime in 1958.

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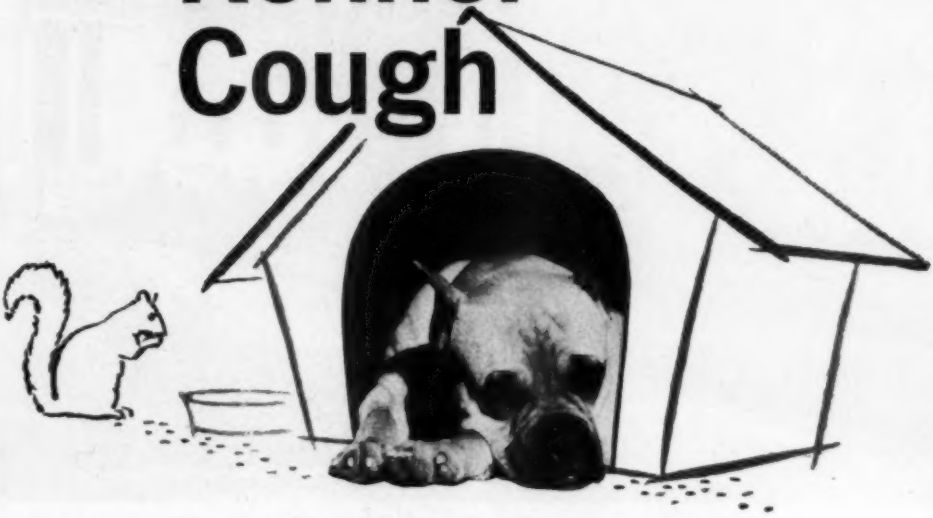
Kennel Cough



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DEPARTMENT OF VETERINARY MEDICINE

PARKE, DAVIS & COMPANY

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1959 Convention To Be Held in Kansas City

Joint Session Planned with Pan American Congress of Veterinary Medicine for Week of August 23

Local Committee and Other Arrangements Progressing—Housing Bureau Ready for Hotel Reservations

Kansas City, Missouri, will be the site of the 96th Annual AVMA Convention. The meeting will be unique in that it will be a joint session with the Pan American Congress of Veterinary Medicine. Plans for the joint undertaking have been under way for several months by an organizing committee representing the AVMA, the Directing Council of Pan American Congresses of Veterinary Medicine, representatives of the profession in Latin American countries, and other agencies.

This joint Pan American-AVMA Meeting is the outgrowth of a resolution adopted by the Second Pan American Congress when it met in Sao Paulo, Brazil, in 1954, the first having been held in Lima, Peru, in 1951. The resolution requested that the Third Pan American Congress of Veterinary Medicine be held in the United States, if possible, and it was subsequently decided to make it a joint affair with the AVMA.

Coordination of plans is being effected through the organizing committee, appropriate AVMA groups such as the Committee on Program (Section Officers), the Committee on Local Arrangements, and the Pan American Directing Council. The Joint Meeting promises to be an unusual and interesting occasion, with inter-American overtones, international authorities on the program, and prospects that a considerable number of Latin American veterinarians will attend.

Above—the William Rockhill Nelson Gallery of Art, Kansas City, contains an extensive collection of Chinese art objects, Italian paintings, and sculpture. This building is regarded as one of the supreme achievements of museum architecture in America.

Committee on Local Arrangements

Officers

General Chairman: Dr. W. H. Mowder, Independence, Mo.

Vice-Chairmen:
Dr. A. S. Coates, Jr., Louisburg, Kan.
Dr. L. D. Jernigan, Council Grove, Kan.
Dr. A. H. Quin, Kansas City, Mo.

General Secretary: Dr. F. A. O'Donnell, Kansas City, Mo.

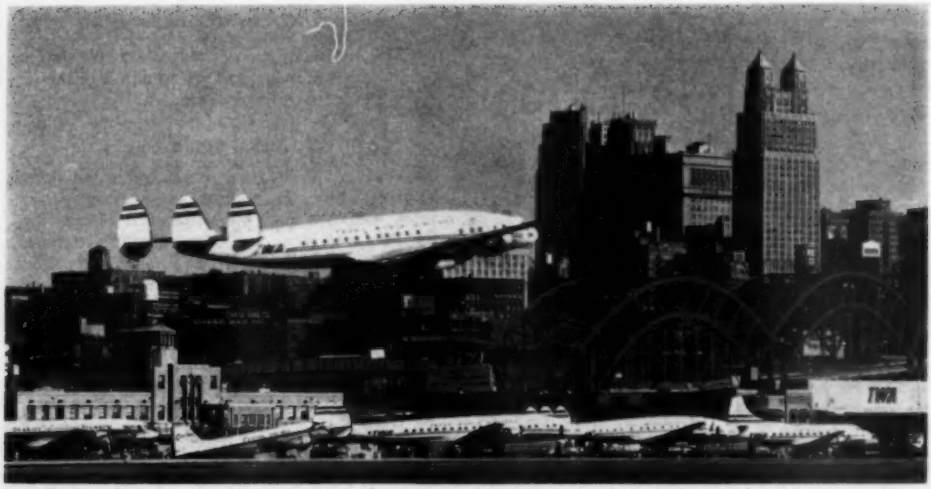
Committee Chairmen

Alumni Dinners—Dr. J. C. Davis, Kansas City, Mo.

Entertainment—Dr. F. B. Ogilvie, Kansas City, Kan.

Exhibits—Dr. M. F. Wallace, Kansas City, Kan.

Garages, Parking, Transportation—Dr. R. E. Guilfoil, Kansas City, Kan.



Kansas City is unique among most of America's large cities in that its busy municipal airport is only five minutes' ride from the heart of town.

Golf Tournament—Dr. L. T. Hopkins, Kansas City, Kan.

Hotels and Housing—Dr. K. M. Curts, Kansas City, Kan.

Meeting Rooms and Equipment—Dr. Arthur Freeman, Kansas City, Mo.

Publicity and Public Relations—Dr. C. M. Cooper, Kansas City, Kan.

Reception and Hospitality—Dr. J. F. Knappenberger, Kansas City, Mo.

Registration and Information—Dr. W. L. Schondelmeyer, Independence, Mo.

Television—Dr. T. M. Eagle, Kansas City, Mo.

Women's Activities—Mrs. G. L. Dunlap, Kansas City, Mo.

Hotels and Housing Bureau

Fourteen hotels have been selected to house convention registrants. All rooms in hotels marked with an asterisk on the reservation form will be air-conditioned. The majority of the rooms in the other hotels listed will also be air-conditioned, but some rooms without air-conditioning will also be available. Most hotels are within walking distance of the splendid Kansas City Auditorium where the program sessions will be held, as well as some other convention events. The Auditorium is also completely air-conditioned.

Hotel information, rates and reservation form will be found on adv. pages 47 and 48 of this issue, facing a location map for hotels and some other centrally located points of interest on adv. page 46.

The Kansas City Convention and Visitors Bureau will handle reservations and is now ready to function. Early reservations are advised.

"Family Plan" Available

The 14 hotels selected for convention housing offer a "family plan" whereby children under 14 years of age will be accommodated in the same

The 96th Annual AVMA Convention will be held in the beautiful Kansas City Auditorium (right). The Auditorium Plaza garage can accommodate 1,200 automobiles.

room with their parents at no extra charge. If more than one room is required to accommodate children, the hotel will charge only the single rate for each room.

Motels

A number of excellent motels are located in the Kansas City area and reservations may be made through the Kansas City Convention and Visitors Bureau, 1030 Baltimore Ave., Third Floor, Kansas City 5, Mo.

The Hotel Muehlebach has been selected as the headquarters hotel, and pre-convention sessions of the Executive Board and House of Delegates will be held there.

The Organizing Committee for the Joint Pan American-AVMA Meeting comprises Drs. J. A. McCallam, Juan F. Figueroa, and Jose Santivanez M., co-chairmen; Drs. H. E. Kingman, Jr., G. P. Lockhart, Carlos T. Rosenbusch, and C. D. Van Houweling, vice-chairmen; Drs. Humberto Ceballo, J. A. Henderson, Oscar Valdes Ornelas, Carlos R. Maldonado, Roberto E. Parajon, Adolpho M. Penha, R. E. Rebrassier, and Ramon Rodriguez, honorary members; Drs. B. D. Blood, E. C. Chamberlayne, and Mr. R. C. Dawson, consultants; and Dr. J. G. Hardenbergh, secretary.

APPLICATIONS

Applicants Not Members of Constituent Associations

In accordance with paragraph (c) of Section 1, Article I, of the Bylaws, the names of applicants who are not members of constituent associations shall be published in the JOURNAL. Written comments received by the Executive Secretary from any active member regarding the application as published, will be furnished to the Judicial Council for its consideration prior to acceptance of the application.

BRINKMAN, BEN A.
Room 221, 900 Peachtree N. E., Atlanta 9, Ga.
D.V.M., Alabama Polytechnic Institute, 1943.
Vouchers: H. E. Schaulis and L. S. Poley.

GINN, WILLIAM
Irwin Army Hospital, Fort Riley, Kan.
D.V.M., Alabama Polytechnic Institute, 1934.
Vouchers: Wm. E. Jennings and H. C. Maxey.

ORTHEY, GEORGE F.
33 Nicholson Rd., Fort Sheridan, Ill.
V.M.D., University of Pennsylvania, 1958.
Vouchers: Wm. E. Jennings and H. C. Maxey.

PAUL, BALBIR SINGH
Punjab Veterinary College, Hissar, India.
B.V.Sc., Punjab Veterinary College, 1946.
Vouchers: C. R. Smith and R. W. Redding.

STEWART, ROLAND R.
Meat and Dairy Hygiene School, USAMS, 1819 W. Pershing Rd., Chicago, Ill.
D.V.M., Ohio State University, 1956.
Vouchers: B. F. Bridges and D. W. Hubbard.

THOMASSEN, ROBERT W.
U. S. Army Medical Research and Nutrition Lab., Fitzsimon's Army Hospital, Denver, Colo.
D.V.M., Colorado State University, 1956.
Vouchers: S. W. Thompson and E. E. Dean.

YOUNG, LEONARD E.
Station Veterinarian, Fort Carson, Colo.
D.V.M., Alabama Polytechnic Institute, 1943.
Vouchers: Wm. E. Jennings and H. C. Maxey.

Award Nominations Invited

AVMA members are invited to submit nominations for the following awards administered by the Association to be given in 1959.

AVMA Award

This award is designed to recognize individuals who have contributed to the advancement of veterinary medicine in its organizational aspects. Veterinarians who have exerted outstanding leadership in the building of stronger local, state, or national associations are eligible for this Award.

Twelfth International Congress Prize

The Executive Board, serving as a committee on awards, recommends that recipients of this Award be selected on the basis of contributions to veterinary science that are international in scope. This would include recognition of outstanding service by veterinarians in countries other than the United States and Canada, as well as veterinarians in this country who have contributed to international understanding of veterinary science.

Borden Award

The Borden Award is bestowed in recognition of "outstanding research contributions to dairy cattle disease control." The conditions specified by the donor require that the recipient shall have published the results of his work in recognized scientific journals, and that a statement shall be furnished the Borden Company Foundation setting forth the qualification of the recipient, together with a pertinent bibliography of his published investigations.

Gaines Award

The Award is made to a veterinarian whose work (within the preceding 5 years) in either clinical work or research in the basic sciences, is judged to have contributed significantly to the advancement of small animal medicine and surgery.

Deadline and Rules for Nominations

Nominations for any of the foregoing awards should be submitted to Committee on Awards, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., not later than May 15, 1959.

Each nomination should contain specific details and comprise a brief of the nominee's accomplishments and qualifications for the award in question. The nomination must also contain brief biographical data, including an account of the nominee's professional background and experience.

Don't delay—make your hotel reservations today!

See advertising pages 47 and 48 for hotel information and application blank.

For broader control of many skin disorders

Vioform®-Hydrocortisone

Cream

reduces inflammation, relieves itching, controls scaling in chronic and acute eczematous conditions

provides antibacterial and fungicidal action against primary and secondary invaders

promotes rapid healing

Vioform-Hydrocortisone Cream has low toxicity

It may be applied frequently for combating fungal infections, including ringworm. Well tolerated in cats.

Sold only to graduate veterinarians

Supplied: *Cream* (water-washable base), containing Vioform® (iodochlorhydroxyquin CIBA) 3% and hydrocortisone 1%; tubes of 5 and 20 Gm.

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SUMMIT, N.J.

Addition to the AVMA Film Library

The Veterinarian

	Color;	Produced by	
16 mm.	Running time	Audio Productions Inc.,	Rental
Sound.	25 min.	For The Texaco Co.	$2.50

This is an excellent color film telling the story of "The Veterinarian" primarily from the standpoint of practice. The education of the veterinary student, as well as recent contributions by veterinarians to the healing arts, are described. The practitioner's participation in regulatory programs and some of the newer developments in the art of the practice of veterinary medicine receive consideration. Emphasis is placed on the livestock producer and the veterinarian working together protecting the nation's livestock population.

The AVMA served in an advisory capacity in the production of this film.

Veterinarians will enjoy this film and can make good use of "The Veterinarian" when appearing before farm, urban, or civic group audiences. This film would be excellent in vocational guidance or career presentations.

COMING MEETINGS

Notices of coming meetings must be received 30 days before date of publication.

Washington, State College of. Eleventh annual conference. State College of Washington, School of Veterinary Medicine, Pullman, April 6-8, 1959. Robert W. Leader, chairman.

American Veterinary Radiology Society, April 7, 1959, Nassau Tavern, Princeton, N. J. Dr. Julius J. Fishler, Elkhart, Ind., secretary.

New Jersey, Veterinary Medical Association of. Diamond jubilee meeting. Princeton Inn, Princeton, N. J., April 8-9, 1959. John R. McCoy, Rutgers University, New Brunswick, secretary.

Oklahoma State University. Annual Oklahoma conference for veterinarians. College of Veterinary Medicine, Campus Veterinary Medical Center, April 13-14, 1959. John H. Venable, steering committee chairman.

Pennsylvania, University of. Fifty-ninth annual conference of veterinarians. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, April 28-29, 1959. Mark W. Allam, dean.

Florida, University of. Second conference for veterinarians. J. Hillis Miller Health Center, University of Florida, Gainesville, May 2-3, 1959. W. R. Pritchard, program chairman.

Kansas Veterinary Medical Association. Twenty-first annual conference. School of Veterinary Medicine, Kansas State College, Manhattan, May 31 (evening) to June 2, 1959. M. W. Osburn, 1525 Humboldt, Manhattan, secretary-treasurer.

Texas, A. & M. College of. Twelfth annual conference. School of Veterinary Medicine, A. & M. College of Texas, College Station, June 4-5, 1959. R. D. Turk, chairman.

Illinois, University of. Fourth Biennial Symposium on Animal Reproduction. University of Illinois, Urbana, June 18-20, 1959. Address P. J. Dziuk, 111 Animal Genetics, University of Illinois, Urbana, for further information.

South Carolina Association of Veterinarians. Annual summer meeting. Clemson House, Clemson, S. Car., June 18-20, 1959. B. C. McLean, 808 Linden St., Aiken, S. Car., program chairman.

Maritime Veterinary Associations, joint conference. Mount Allison University, Sackville, New Brunswick, June 23-25, 1959. P. D. McKercher, Box 310, Sackville, general chairman.

North Carolina Veterinary Medical Association. Fifty-eighth annual summer meeting. Morehead Biltmore Hotel, Morehead City, June 23-25, 1959. J. T. Dixon, secretary-treasurer.

Kentucky Veterinary Medical Association. Forty-eighth annual convention. Sheraton-Seelbach Hotel, Louisville, Ky., July 13-14, 1959. L. S. Shirrell, 545 East Main St., Frankfort, secretary.

Third Pan American Congress of Veterinary Medicine and Ninety-Sixth Annual Meeting, American Veterinary Medical Association. Joint meeting. Kansas City, Mo., Aug. 23-27, 1959. H. E. Kingman, Jr., executive-secretary, AVMA, 600 S. Michigan Ave., Chicago 5, Ill. B. D. Blood, secretary-general, Directing Council, Pan American Congress of Veterinary Medicine, P.O. Box 99, Azul, F.C.N.G.R., Argentina, S.A.

Foreign Meetings

Veterinary Symposium in Israel (with International Farmers Convention); Veterinary Institute, Beit-Dagan, Israel, May 10-12, 1959. Dr. A. Kimron, Veterinary Institute, director. (Particulars are also obtainable from Dr. H. E. Newman, American Veterinarians for Israel, Box 145, Merrifield, Va.

International Veterinary Congress. Sixteenth session. Madrid, Spain, May 21-27, 1959. Prof. Pedro Carda A., general secretary, Calle Villanueva 11, Madrid.

U.S. COMMITTEE: Dr. W. A. Hagan, chairman, New York State Veterinary College, Ithaca, N. Y.; Dr. J. G. Hardenbergh, secretary, 600 S. Michigan Ave., Chicago 5, Ill.

Third World Congress on Fertility and Sterility. Amsterdam, Holland, June 7-13, 1959. Dr. L. I. Swaab, Sint Agnietenstraat 4, Amsterdam, Holland, honorary secretary.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Medical Association, the first Thursday of each month. James L. Chambers, 4307 Normanbridge Rd., Montgomery, Ala., secretary-treasurer.

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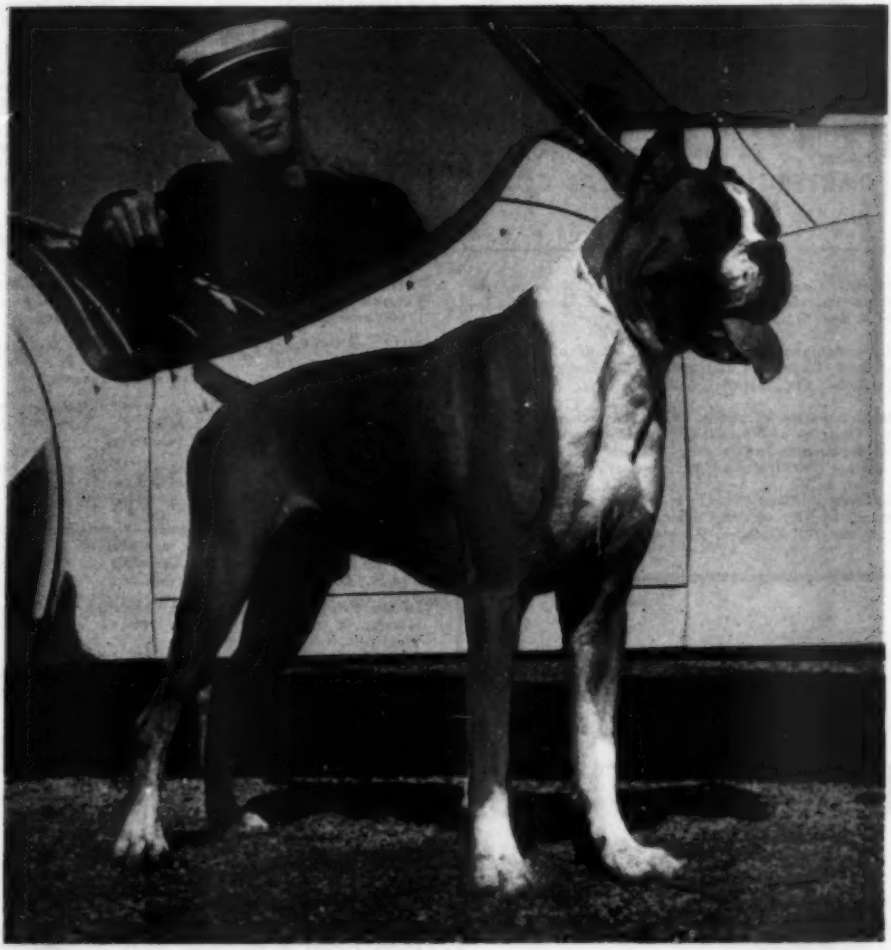

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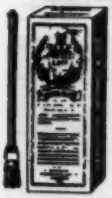

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Jefferson County Veterinary Medical Association, the second Thursday of each month. Dan P. Griswold, Jr., 714 S. 39th St., Birmingham, secretary.

Mobile-Baldwin Counties Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, P.O. Box 1767, Decatur, Ala., secretary.

Northeast Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

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ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. J. W. Langley, Jr., P.O. Box 5013, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. Gwyn Chapin, 2215 E. Calle Vista, Tuscon, Ariz., secretary.

ARKANSAS—Pulaski County Veterinary Medical Society, the second Tuesday of each month. Harvie R. Ellis, 54 Belmont Drive, Little Rock, Ark., secretary-treasurer.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. John S. Blackard, 420 Appian Way, Richmond, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16th St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Paul S. Chaffee, 2353 McKinley Ave., Fresno, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of the month. James L. Frederickson, 17 Nile St., Bakersfield, Calif., secretary-treasurer.

Mid-Coast Veterinary Medical Association, the first Thursday of each month. William P. Matulich, P. O. Box 121, San Luis Obispo, Calif., secretary-treasurer.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. V. Todorovic, 47 Mann Ave., Watsonville, Calif., secretary.

Northern California Association of Veterinarians, the second Tuesday of the month. Andrew F. Giambroni, P.O. Box 782, Red Bluff, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. T. J. Carleton, 325 W. Lockeford St., Lodi, Calif., secretary-treasurer.

Orange Belt Veterinary Medical Association, the second Monday of each month. R. Y. Foos, P.O. Box 955, Victorville, Calif., secretary-treasurer.

Orange County Veterinary Medical Association, the third Thursday of each month. H. M. Stanton, 1122 S.E. U.S. Highway 101, Tustin, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of the month. R. M. Grandfield, 416 Stephens Rd., San Mateo, Calif., secretary-treasurer.

Redwood Empire Veterinary Medical Association, the third Thursday of the month. R. R. Rediske, 833 Vallejo Ave., Novato, Calif., secretary-treasurer.

Sacramento Valley Veterinary Medical Association, the second Wednesday of the month. E. C. Story, 4819 "V" St., Sacramento 17, Calif., secretary-treasurer.

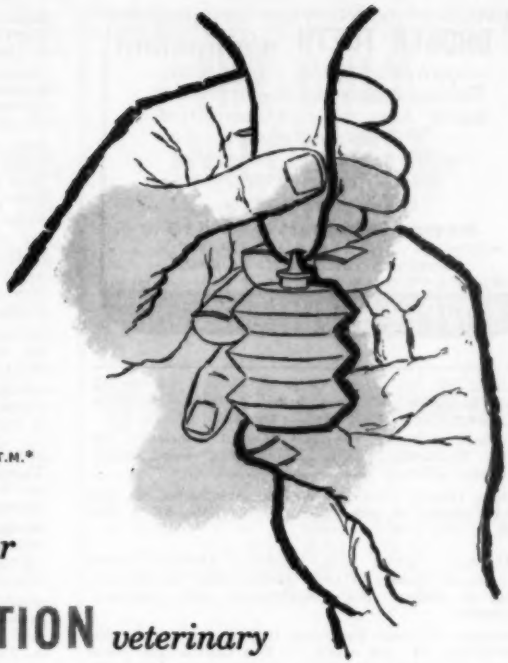
San Diego County Veterinary Medical Association, the fourth Tuesday of the month. Robert F. Burns, 7572 North Ave., Lemon Grove, Calif., secretary-treasurer.

San Fernando Valley Chapter SCVMA, the second Tuesday of each month at 7:30 p.m., Hody's Restaurant, North Hollywood, Calif. Dr. V. H. Austin, 14931 Oxnard St., Van Nuys, secretary-treasurer.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, every three months, no set date. Gerald M. Clark, 5415 8th St., Carpinteria, Calif., secretary-treasurer.

Santa Clara Valley Veterinary Medical Association, the



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1. Mires, M. H., and Chadwick, R. H.: Vet. News 10:3 (Jan.-Feb.) 1947. 2. Mires, M. H.: J. Am. Vet. M. Ass. 117:49 (July) 1950.

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last Tuesday of the month. Robert L. King, 1269 Grant St., Santa Clara, Calif., secretary-treasurer.

Southern California Veterinary Medical Association, the third Wednesday of the month. Mr. Don Mahan, executive secretary.

Tulare County Veterinary Medical Association, the second Thursday of each month. J. W. Cole, Rt. 5, Box 326, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Medical Society, the fourth Tuesday of every month. Gene M. Bierhaus, 2896 S. Federal Blvd., Englewood, Colo., secretary-treasurer.

Northern Colorado Veterinary Medical Society, the first Wednesday of each month, in Fort Collins. Dr. James Voss, Veterinary Hospital, Colorado State University, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Medical Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. A. P. Mayer, Jr., R.F.D. 2, Newark, Del., secretary-treasurer.

DISTRICT OF COLUMBIA—District of Columbia Veterinary Medical Association, the second Tuesday evenings of January, March, May, and October. R. B. Gochenour, 10109 Ashwood Dr., Kensington, Md., secretary-treasurer.

FLORIDA—Central Florida Veterinary Medical Association, the first Friday of each month at 8:00 p.m., place specified monthly. L. R. Poe, 753 W. Fairbanks Ave., Winter Park, Fla., secretary-treasurer.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, St. Petersburg. Fred Jones, 3606 S. Dale Mabry, Tampa, Fla., secretary.

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Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodson's Restaurant, Stephen C. Hite, 5807 105th St., Jacksonville 10, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. John Webb, P.O. Box 183, Cantonment, Fla., secretary-treasurer.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. B. W. Bigger, 2833 S. 4th St., Fort Pierce, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. John S. Haromy, Route #1, Box 107-A, Lake Wales, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Joe B. O'Quinn, 1690 E. 4th, Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. G. L. Burch, P.O. Box 405, Ocala, Fla., secretary-treasurer.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. Robert E. Cope, 127 E. Mason, Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Medical Society, the third Thursday of each month at the Elk's Home, 726 Peachtree St., Atlanta. W. V. Smith, 1039 Marietta St., N.W., Atlanta, Ga., secretary.

Georgia-Carolina Veterinary Medical Association, the second Monday of each month at 8:00 p.m., at the Town Tavern, Augusta, Ga. J. A. Schmitz, Augusta, Ga., secretary-treasurer.

South Georgia Veterinary Medical Association, the second Sunday of each quarter at 3:30 p.m., at the Radium Springs Hotel, Albany, Ga. M. W. Hale, Route 2, Tifton, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Charles H. Armstrong, 1021 Davis St., Evanston, secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. E. I. Pilchard, Champaign, Ill., secretary-treasurer.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. P. T. Parker, 224 N. Mill St., secretary-treasurer.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. Stanton Williamson, 217 W. Chippewa St., South Bend, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P.O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, P.O. Box 183, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breeze House, Ankeny, Iowa. John Herrick, 202 S. Hazel Ave., Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Veterinary Medical Society, the Second Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. T. F. Bartley, P.O. Box 454, Cedar Rapids, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Lakes Veterinary Association, the first Tuesday of each month, September through May, at 6:30 p.m., at the Gardson Hotel, Estherville, Iowa. Barry Barnes, P.O. Box 162, Milford, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Winneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Bldg., Sheldon. W. Ver Meer Hull, secretary.

Southeastern Iowa Veterinary Association, the first Tuesday of each month at Mt. Pleasant, Iowa. Warren Kilpatrick, Mediapolis, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October, Hotel Chieftain, Council Bluffs, Iowa. J. P. Stream, 202 S. Stone St., Creston, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at 7:00 p.m., at All Vets Center, Clear Lake, Iowa. W. A. Danker, Dows, Iowa, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. R. H. Folsom, P.O. Box 323, Danville, Ky., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday of each month in Louisville or within a radius of 50 miles, except January, May, and July. G. R. Comfort, 2102 Reynolds Lane, Louisville, Ky., secretary-treasurer.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Leonard D. Krinsky, 6111 Hartford Rd., Baltimore, Md., secretary.

MICHIGAN—Central Michigan Veterinary Medical Association, the first Wednesday of every month at 7 p.m. Jerry Fries, 2070 E. Main St., Owosso, Mich., secretary.

Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert W. Acton, 4110 Spring Rd., Jackson, Mich.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. Alvin R. Conquest, P.O. Box 514, Grand Blanc, Mich., secretary.

Southeastern Michigan Veterinary Medical Association, the fourth Wednesday of every month, September through May. Louis J. Rossoni, 24531 Princeton Ave., Dearborn 8, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis, Mo., at 8 p.m. Edwin E. Epstein, 4877 Natural Bridge Ave., St. Louis 15, Mo., secretary.

Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Thursday of each month at the Hotel President, Kansas City, Mo. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kan., secretary.

NEVADA—Western Nevada Veterinary Society, the first Tuesday of each month. Paul S. Silva, 1170 Airport Road, Reno, Nev., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, R.D. 1, Box 284A, Cranbury, N. J., secretary.

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Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April, except December, at the Irvington House, 925 Springfield Ave., Irvington, N.J. Bernard M. Weiner, 787 Clinton Ave., Newark, N.J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Elks Club, Hackensack. James R. Tanzola, Upper Saddle River, N.J., secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. L. Smith, P.O. Box 938, Trenton, N.J., secretary.

South New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collmont Diner, Collingswood, N.J. Marvin Rothman, 718 Dwight Ave., Collingswood, N.J., secretary.

NEW MEXICO—Bernalillo County Veterinary Practitioners Association, third Wednesday of each month, Fez Club, Albuquerque, N.M. Jack Ambrose, 3018 N. Rio Grande Blvd., Albuquerque, secretary-treasurer.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. C. G. Sims, 2450 Battleground Ave., Greensboro, N. Car., secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. J. G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Friday of each month at Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. J. E. Currie, 690 N. Leak St., Southern Pines, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the second Thursday of every month at 7:00 p.m. in the George Vanderbilt Hotel, Asheville, N. Car. Vlin Lind, 346 State St., Marion, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwam, 6210 Hamilton Ave., at North Bend Road. G. C. Lewis, 451 E. Galbraith Rd., Cincinnati, Ohio, secretary-treasurer.

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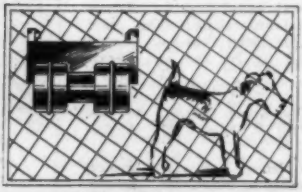

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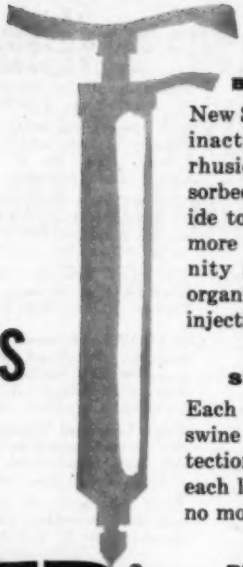

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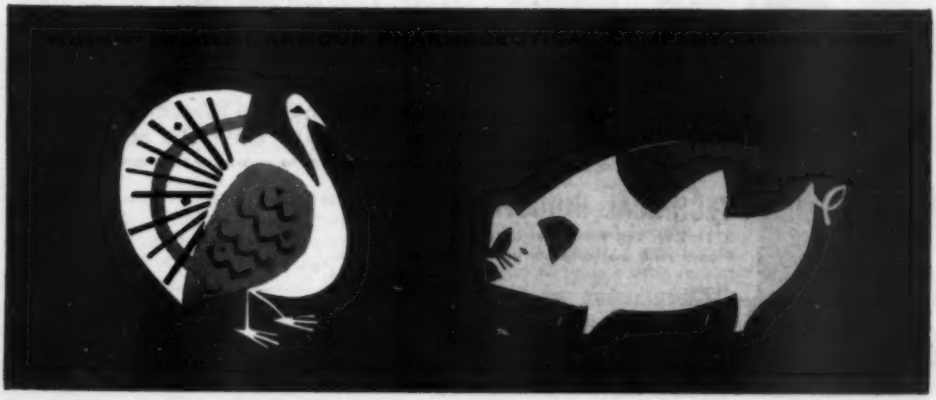

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, 3120 Valley View Dr., Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, 8208 Carnegie Ave., Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month. O. W. Fallang, 6941 Far Hills Ave., Dayton, secretary.

Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. D. J. Kern, Killbuck, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the Fourth Tuesday of each month, at 9:00 p.m., Youngstown Maennerchor Club, Youngstown, Ohio. Sam Segall, 2935 Glenwood Ave., Youngstown, secretary.

Miami Valley Veterinary Medical Association, the first Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, 1609 W. Bancroft St., Toledo, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, 42 W. Market St., Akron, Ohio, secretary-treasurer.

Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Mrs. R. Slusher, Mason, Ohio, secretary-treasurer.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Claude A. Tigert, 3032 N.W. 68th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Arlen D. Hill, 5302 E. 11th St., Tulsa, Okla., secretary.

Tulsa Association of Small Animal Veterinarians, first and third Mondays, City-County Health Dept. T. E. Messler, 3104 E. 51st St., Tulsa, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m. Ireland's Restaurant, Lloyds, 718 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

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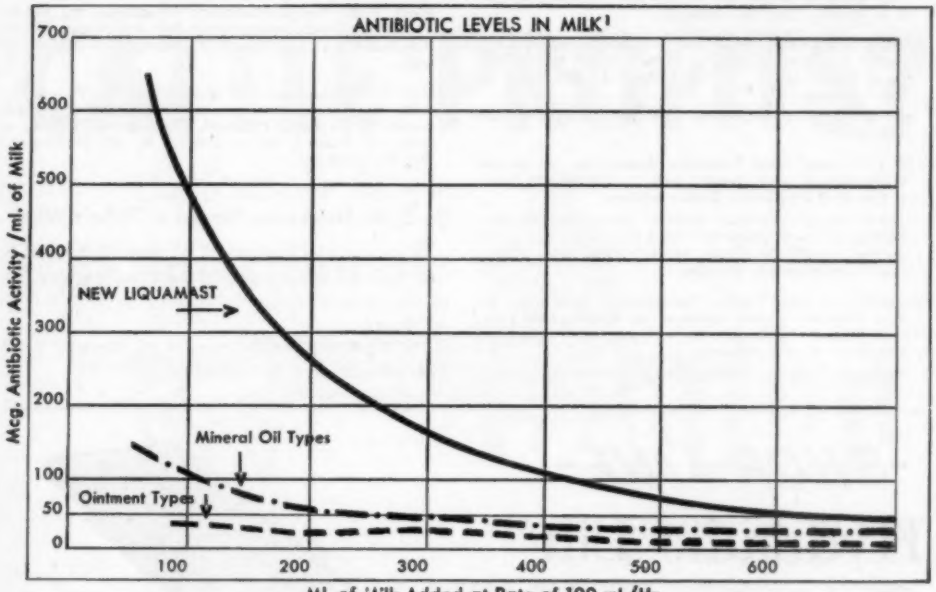

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Completely soluble in milk—permits direct contact with causative organisms.

Plus

Stability—Nonfreezing—Nonirritating

Supply—LIQUAMAST is available in ½ oz. tubes with a total of 426 mg. of oxytetracycline (as the hydrochloride) in each tube, packaged in 12-tube cartons with a tube squeezer.

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Department of Veterinary Medicine
PFIZER LABORATORIES
Division, Chas. Pfizer & Co., Inc.

Tuesday of each month, except July and August, at the Marion Hotel, Salem. Robert J. Mallorie, P.O. Box 155, Silverton, Ore., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine. Raymond C. Snyder, N.E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

Lehigh Valley Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Pennsylvania Northern Tier Veterinary Medical Association, the third Wednesday of each odd numbered month. R. L. Michel, Troy, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

Georgia-Carolina Veterinary Medical Association—see GEORGIA.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. Jack E. Habluetzel, Route 1, Box 65-N, Ingleside, Texas, secretary.

Dallas County Veterinary Medical Association, the first Tuesday of each month at 7:30 p.m., at a place to be specified. Frank N. Black, 12830 Preston Rd., Dallas, Texas, corresponding secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary Ct., Richmond 20, Va., secretary.

Northern Virginia Veterinary Conference Association, the second Tuesday of each month. T. P. Koudelka, P.O. Box 694, Harrisonburg, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwestern Virginia Veterinary Medical Association, the first Thursday of each month. D. F. Watson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle. Roy C. Toole, 10415 Main St., Bellevue, secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. B. D. Benedictson, 3712 Plummer St., Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the third Thursday of each month in the Hotel Pritchard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

• • •

Dr. E. W. Newhaven Named in "Who's Who"

The name of Dr. Edward W. Newhaven (MCK '18) is listed in the recently published sixth edition of the midwest regional dictionary of *Who's Who in America.*

Dr. Newhaven is the founder of Western Yeast Company, located in Chillicothe, Ill.

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#552 With white porcelain enameled base and stainless steel top.

#553 With pastel green porcelain enameled base and stainless steel top.

Top drawn from one piece with round corners; no welding or seams, no sharp edges exposed. Size 22 x 60 inches.

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IN 2 CONVENIENT SIZES

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WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.) C. R. Carlson, 1109 E. LaSalle Ave., Barron, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. Jordan Lewis, Menomonee Falls, Wis., secretary-treasurer.

Northeastern Wisconsin Veterinary Medical Association. the third Wednesday in April. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. L. C. Allenstein, 209 S. Taft St., Whitewater, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. John B. Fleming. 209 E. 4th St., Marshfield, Wis., secretary.

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Curts Laboratories Opens Memphis Division

Dr. K. M. Curts, of Curts Laboratories, Kansas City, Kan., has announced the opening of Curts and Morgan, which will be a Memphis division of the parent organization.

In charge of the new division will be Mr. A. T. Morgan, who has been serving veterinarians in that area for the past several years.

The South is growing in its agricultural stature, even greater growth is predicted for the immediate future, and the role of the veterinarian is being recognized in this expansion and development. Curts and Morgan will keep veterinarians in this area supplied with biological and pharmaceutical products as well as instruments.

Curts and Morgan are located at 156 E. Calhoun Ave., Memphis 2, Tenn.

Poultry Specialist Joins Sterwin Chemicals Staff

Appointment of Dr. William P. Williams as a poultry specialist on the staff of Sterwin Chemicals Inc., has been announced by Robert S. Whiteside, president.

A well-known veterinarian, Dr. Williams will serve in the department headed by Dr. R. C. Sherwood, vice-president and technical director of the company.

Operating from headquarters in Atlanta, Ga., Dr. Williams will provide technical assistance on poultry problems to Sterwin's customers in the southeastern states. He will also maintain close technical relations with veterinary schools, poultry husbandry departments, and experimental and research stations in connection with Sterwin products for the poultry and feed industries.

Prior to joining Sterwin, Dr. Williams was veterinarian for Chas. Vantress Farms, Inc., Duluth, Ga. He was previously associated with the Animal Research Service of the federal government as a district supervisor in South Carolina. He served as veterinarian for the city of Atlanta, and as a member of its board of health. He also was in private veterinary practice in Macon, Ga.

Dr. Williams received the D.V.M. degree from Alabama Polytechnic Institute. He is a member of the American Veterinary Medical Association and Omega Tau Sigma, professional fraternity.

Dark Horse

The term, "dark horse," supposedly refers to a time when owners of well-known horses dyed their hair to get better odds.—*J.Am.M.A., 168, (Nov. 1, 1958): adv. p. 80.*

Argentineans Eat Most Meat

The leading meat-eating populations and the per capita consumption, in 1957, were: Argentina —242 lb. (210 lb. beef); Australia—223 lb.; New Zealand—220 lb.; Uruguay—188 lb.; and the United States—159 lb.—*Foreign Agric. (Jan., 1959): 16.*

Outstanding effectiveness in the routine treatment of CANINE DIARRHEA

FURADEX® ORA-BOLS™ veterinary

Complete remissions in 37 of 38 dogs[1] FURADEX

"... shortened the duration of diarrhea in comparison with previously used drugs, and in most cases produced an apparent complete recovery . . . (The diarrhea) generally ceased in 2 to 7 days without any side effect due to medication."[2]

Containing FURACIN® (brand of nitrofurazone) in an excipient of dextrose for peroral therapy, FURADEX is achieving striking results in bacterial and nonspecific diarrheas and in diarrheas associated with other diseases such as distemper and hepatitis. FURADEX has the advantage of being highly palatable to dogs, which facilitates treatment,[1,2] and is a point of superiority over other preparations.

SUPPLIED: 50 mg. scored ORA-BOLS, bottle of 100.

REFERENCES: 1. Pollock, S.: Control of Nonspecific and Specific Enteritis in the Dog; read at the First Regional Conference on the Nitrofurans in Veterinary Medicine, Wilmington, Delaware (June 5, 1958). 2. Fisher, G. W.: Oral Use of Furadex in Canine Diarrhea, N. A. Vet. **39**:133-134 (Mar. 15) 1958.

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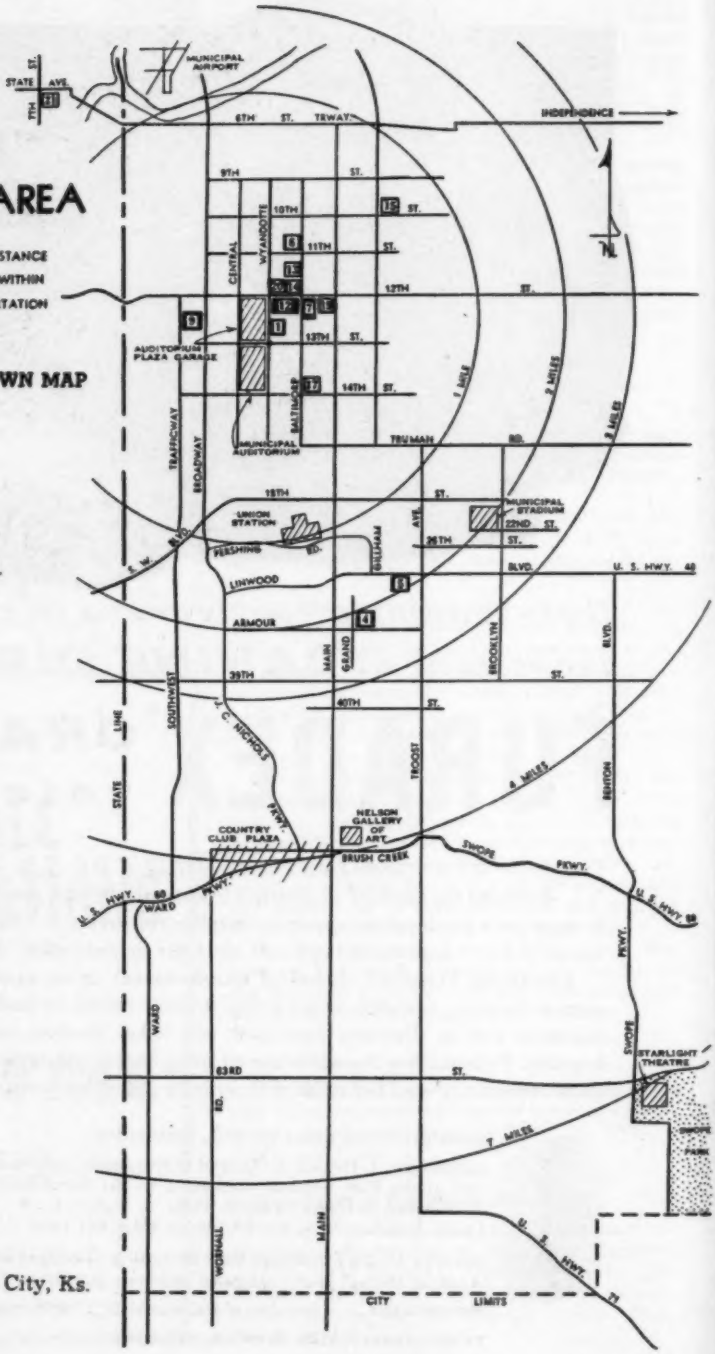
Map of the GREATER KANSAS CITY AREA

ALL HOTELS NOT IN WALKING DISTANCE OF MUNICIPAL AUDITORIUM ARE WITHIN 10 MINUTES BY PUBLIC TRANSPORTATION

HOTEL LIST AND DOWNTOWN MAP

NO.	HOTEL
1	Aladdin, 1213 Wyandotte
4	Bellerive, 214 East Armour Blvd.
5	Berkshire, 1021 E. Linwood
6	Continental, 11th & Baltimore
7	Dixon, 12th & Baltimore
9	Kansas Citian, 1216 Broadway
12	Muehlebach, 12th & Baltimore
13	New Yorker, 1114 Baltimore
14	Phillips, 12th & Baltimore
15	Pickwick, 10th & McGee
17	President, 14th & Baltimore
19	Senator, 17 W. 12th St.
20	State, 12th & Wyandotte
21	Town House, 7th and State, Kansas City, Ks.



HOTEL INFORMATION — KANSAS CITY, MO., CONVENTION

Ninety-Sixth Annual AVMA Meeting, Aug. 23-27, 1959

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

Hotel and Rate Schedule

Map No.	Hotel	Single	Double	Twin	Suite
1.	Aladdin*	$4.50-8.50	$ 6.50-10.50	$ 9.50-12.00	$17.00-30.00
4.	Bellerive*	5.00-9.00	8.00-12.00	9.00-13.00	From $18.00
5.	Berkshire*	5.00-7.00	7.00-10.00	8.50-10.00	From $14.00
6.	Continental*	6.50-11.00	8.50-13.50	10.00-14.00	$20.00-32.00
7.	Dixon	4.50-7.00	6.50-9.00	8.00-12.00	- - - - - - -
9.	Kansas Citian	3.50-8.00	5.50-11.00	7.00-14.00	From $10.00
12.	Muehlebach*	7.00-15.00	11.00-15.00	13.00-17.00	From $24.00
13.	New Yorker	5.50-12.00	8.00-14.00	9.50-14.00	$23.00
14.	Phillips*	7.50-10.50	9.50-13.00	11.50-14.00	$20.50-35.00
15.	Pickwick*	5.85-10.85	6.35-10.85	8.35-12.50	From $14.00
17.	President*	6.50-10.00	9.50-13.00	11.00-15.00	$25.00
19.	Senator	3.50-7.00	5.00-10.00	6.00-10.00	$15.00
20.	State	4.75-6.50	7.50-8.75	8.75-9.25	- - - - - - -
21.	Town House*	5.50-12.00	10.00-13.50	11.00-16.00	From $23.00

*100 per cent air-conditioned; in other hotels listed, majority of rooms air-conditioned.

FAMILY PLAN—The above hotels offer a "family plan" whereby children under 14 years of age will be accommodated in the same room with their parents at no extra charge. If more than one room is required to accommodate children, the hotel will charge only the single rate for each room.

MOTELS—Reservations for motels in the Kansas City area may be made through the Kansas City Convention and Visitors Bureau, 1030 Baltimore Ave., Third Floor, Kansas City 5, Missouri.

PLEASE USE APPLICATION ON REVERSE SIDE FOR HOTEL ACCOMMODATIONS

Application for Hotel Accommodations

1959 AVMA Convention — Kansas City, Missouri

Convention and Visitors Bureau
1030 Baltimore Ave., Third Floor, Kansas City 5, Mo.

The Convention and Visitors Bureau will make every effort to place you according to your expressed wishes, or to best advantage elsewhere if that is not possible and you desire us to do so.

Please give us the complete information requested below. At least four choices of hotels, or more if you desire, are necessary. Arrange for double occupancy of rooms wherever possible; only a limited number of single rooms is available.

Date.....

Please make hotel reservation in accordance with the following:
Accommodations desired:

Hotel..... First Choice

Hotel..... Second Choice

Hotel..... Third Choice

Hotel..... Fourth Choice

.....Room WITH bath for one person Rate per room desired $..... to $.....

.....Room WITH bath for two persons (double bed) Rate per room desired $..... to $.....

.....Room WITH bath for two persons (twin beds) Rate per room desired $..... to $.....

.....Large room WITH bath for..... persons Rate per room desired $..... to $.....

.....Suite—Parlor, ...Bedroom(s) with bath for ..... persons. Rate per suite desired $.....

Arrival date....., hour.....A. M. .....P. M.
Departure date.....

If reservation cannot be made in one of the hotels indicated shall we place you elsewhere? Yes..... No.....

Please check your mode of transportation: Car..... Train..... Plane..... Bus.....

Rooms will be occupied by (NAMES OF ALL PARTIES MUST BE LISTED)
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Street address .....

City ..... State .....

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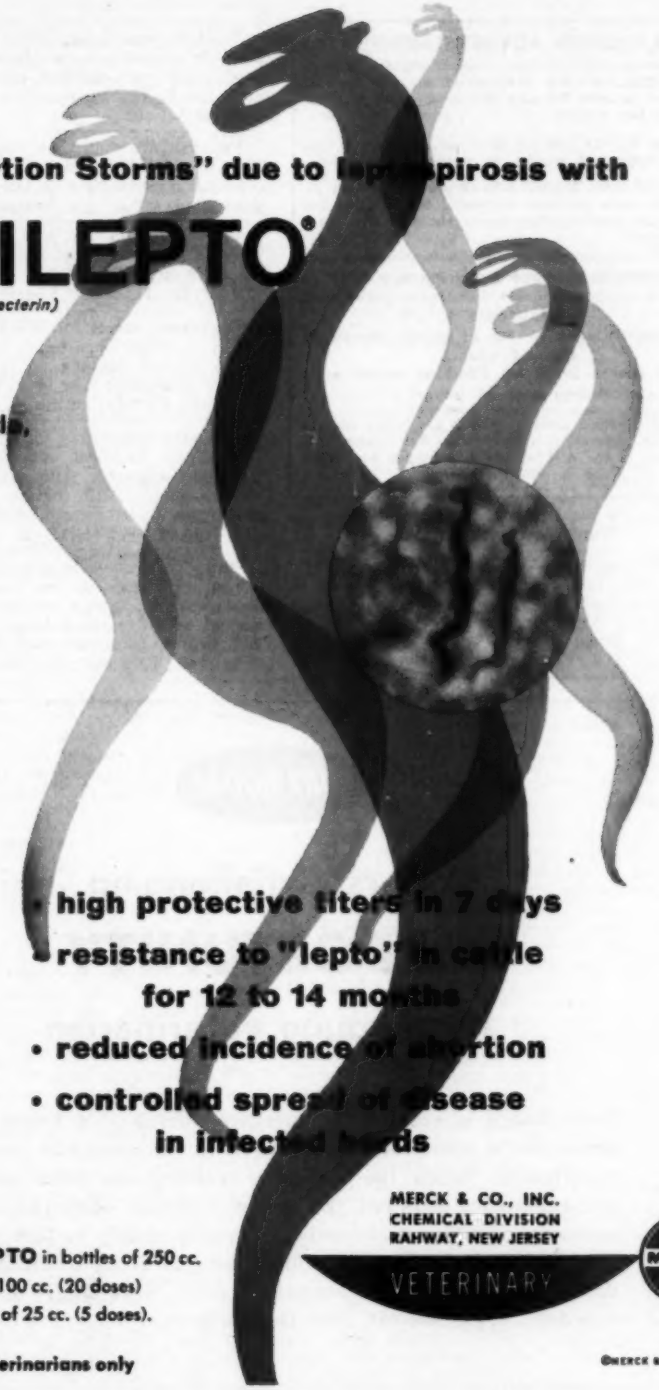

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TOTAL WORD COUNT must include complete box number address (8 words) or personal address line.

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DEADLINES

1st of month issue — 8th of month preceding date of issue.

15th of month issue — 22nd of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the box number, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be sent to the advertiser.

Wanted—Veterinarians

Capable experienced veterinarian who would enjoy freedom from management problems but loves to tackle professional ones, and works well with clients and associates. New York State license; references; state salary. Boynton Small Animal Hospital, 299 Central Park Ave., Yonkers, N.Y.

Wanted—veterinarian with California license to assist in mixed practice. Permanent position with good salary and excellent working conditions. Address Dr. F. H. Saunders, 336 East Lafayette Street, Stockton 3, Calif.

Veterinarian wanted to head nutritional department of old established Iowa feed manufacturer. Exceptional opportunity with fast-growing concern. Address "Box E 32," c/o JOURNAL of the AVMA.

Veterinarian to do predominantly large animal work in mixed practice; modern hospital. State age, qualifications, and salary expected. Auto required. Contact Dr. H. Grady Young, Thomasville, Ga.

Graduating senior for A.A.H.A. hospital in Ohio Valley. Excellent opportunity for experience in preparation toward opening up for self. Salary $100 weekly; substantial raise in six months. Address "Box G 3," c/o JOURNAL of the AVMA.

Associate veterinarian for small animal hospital in Connecticut. Excellent opportunity to develop surgical and diagnostic skills. Furnished 4-room apartment available; will consider June graduate. State experience, salary desired. Address "Box G 7," c/o JOURNAL of the AVMA.

New Zealand—veterinary surgeon with bacteriological experience in the manufacture of blackleg, enterotoxemia, abortus vaccines. Salary: £2,000 per annum with free car. Passage paid to New Zealand. For further particulars and details apply to Mannings Ltd., P.O. Box 300, Hamilton, N.Z.

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Veterinarian—attractive civil service opening in public health field for graduate veterinarian with New York State license or eligibility for such license. Annual salary increments, liberal sick leave, vacation and retirement plans. From one to three years in health work may qualify applicant to start at $7450 per annum. Apply Dr. Donald B. Thomas, Deputy Commissioner of Health, County of Erie, 601 City Hall, Buffalo, N.Y.

Well-established poultry biological laboratory has position available for veterinarian in diagnostic laboratory and control department. Prefer recent graduate with advanced training in bacteriology and virology. Ideal working conditions with other veterinarians and excellent future. Salary commensurate with qualifications. Address "Box G 14," c/o JOURNAL of the AVMA.

Assistant wanted for Virginia mixed practice. In letter, state age, marital status, availability, licensure, etc. Address "Box G 9," c/o JOURNAL of the AVMA.

Veterinarian wanted as associate in Long Island small animal practice. Opportunity for partnership. Address "Box G 10," c/o JOURNAL of the AVMA.

Wanted—relief veterinarian to take charge of small animal hospital beginning approximately May 15 for about six weeks. Must have Michigan license; home available. Address "Box G 12," c/o JOURNAL of the AVMA.

To operate small animal hospital, salary and percentage, rent or lease, option to buy, Arizona license. Dr. M. J. Bramley, 560 S. Scottsdale Rd., Scottsdale, Ariz.

Wanted—career state civil service field veterinarians, $6,444-$8,424; vacation, sick leave, retirement benefits. Ages 21-50, graduate accredited college; U.S. citizenship required. Contact Personnel Office, State Department of Agriculture, State Capitol, Madison, Wis.

Wanted—Virginia-licensed relief veterinarian, small animals, from July 17 to August 10. Period to be extended greatly if applicant prefers. Please state minimum salary. Dr. M. G. Carbone, 615 N. Glebe Rd., Arlington 3, Va.

Wanted—Positions

Relief veterinarian available, New York and New Jersey licenses, small animals only. Address D.V.M., 1007 80th St., North Bergen, N.J.

Veterinarian, age 39, married, 16 years experience in mixed practice with diversified experience in business and city affairs on an administrative level, now seeks employment with progressive company in related field. Able to invest in remunerative deal. Address "Box G 1," c/o JOURNAL of the AVMA.

Veterinarian, experienced in microbiological techniques, presently at a medical school, desires position as director of experimental animal laboratory. Address "Box G 2," c/o JOURNAL of the AVMA.

Graduate (1956) with experience, desires position as assistant leading to permanent arrangement or partnership in small animal hospital in Illinois, Indiana, or Kentucky. Capital available; will consider purchase or lease. Military obligation completed; available May 1, 1959. Address "Box G 4," c/o JOURNAL of the AVMA.

Married, veteran, with large animal experience, desires position leading to purchase or partnership of general practice in southeastern states. Address "Box G 18," c/o JOURNAL of the AVMA.

Graduate (MSU) desires position leading to partnership in small or mixed practice in California. Address "Box G 5," c/o JOURNAL of the AVMA.

Young veterinarian desires position in small animal practice, Chicago or vicinity. Capable, experienced. Would consider eventual purchase. Address "Box G 13," c/o JOURNAL of the AVMA.

Wanted—licensed veterinarian (D.C. and Maryland) desires part time employment in Washington, D.C. area. Address "Box G 17," c/o JOURNAL of the AVMA.

Wanted—Practices

Interested in purchasing a small animal hospital in suburban Philadelphia, Pa., or nearby area. Please furnish particulars. Address "Box G 11," c/o JOURNAL of the AVMA.

Two experienced veterinarians seek to lease with option or buy small animal hospital in Chicago or suburbs. Address "Box G 15," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Small and large animal hospital. Sale price $14,000 under last year's gross. Definite 2-man practice. This is walkout deal—everything goes. Charles E. Doyle, D.V.M., Practice and Real Estate Broker, 5930 N.W. 39th, Oklahoma City, Okla.

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Mixed practice in a thriving community. This well-established practice is situated in a modern town servicing a large farming area; grosses over $20,000. Sale includes a modern 6-room home, 3 years old, with attached office and kennel room. Drugs and instruments are included in sale. Location is in southern Manitoba near city of Winnipeg. Address "Box E 25," c/o JOURNAL of the AVMA.

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Small animal clinic, New York City, select clientele, low overhead, $10,000. Terms: $5,000 down. Address "Box G 8," c/o JOURNAL of the AVMA.

Nine hospitals available, both large and small. Practice and real estate broker, licensed and bonded. If you wish to buy, sell, or lease, contact Charles E. Doyle, D.V.M. All replies confidential. 5930 N.W. 39th, Oklahoma City, Okla.

Mixed practice, 70 per cent small animal, 30 per cent large animal. Excellent opportunity in Southwest. City population 12,000. Address "Box G 19," c/o JOURNAL of the AVMA.

For sale—mixed practice, Chicago area. Equipped hospital, gross $25,000; 70 per cent small animals. Practice, equipment, drugs: $15,000; long lease or hospital can be purchased. Address "Box G 16," c/o JOURNAL of the AVMA.

For sale—small animal practice in Indiana. Real estate, equipment, and drugs: $15,000. Address "Box G 20," c/o JOURNAL of the AVMA.

Small animal practice for sale in Brooklyn, N.Y. Excellent income and facilities for further expansion. Quick sale due to illness of owner. For further information, write or phone Mrs. M. Birnbaum, 108-54 64th Ave., Forest Hills, N.Y. Phone: TW 7-8740.

Miscellaneous

Eyes from diabetic dogs wanted for study. Should be enucleated promptly after death and preserved in 10% formalin. If possible, kidney, adrenal, and pancreas should accompany the eyes. Please ship with a brief history to Dr. S. R. Roberts, 4704 MacDonald Ave., Richmond, Calif.

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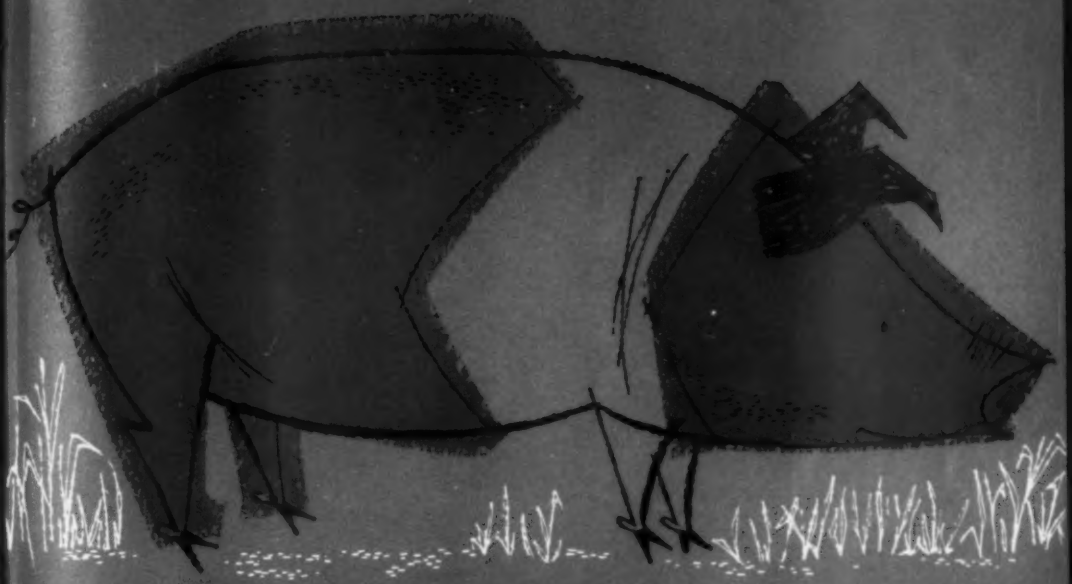

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